VOL. 31 DECEMBER 1955 NO. 12

BULLETIN

OF THE NEW YORK ACADEMY OF MEDICINE

Original Articles by

G. LOLLI

HARRIS ISBELL

RICHARD B. STARK

STATUS OF SURGERY
IN THE MANAGEMENT OF
CARDIAC CONDITIONS

Transcription of a Panel Meeting on Therapeutics

CLARENCE B. DE LA CHAPELLE
M. IRENE FERRER — JERE W. LORD, Jr.
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2. Helmer, C. B., Grayzel, H. G., and Kramer, B.: Archives of Pediatrics 68:382, 1951.
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4. Turell, R.: New York St. J. M. 50:2282, 1950.

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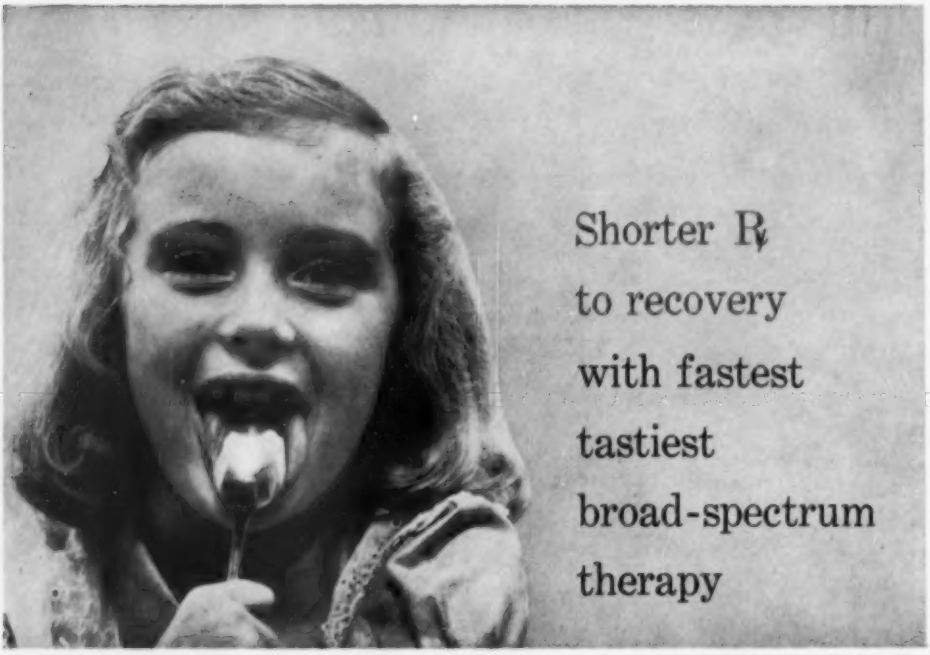

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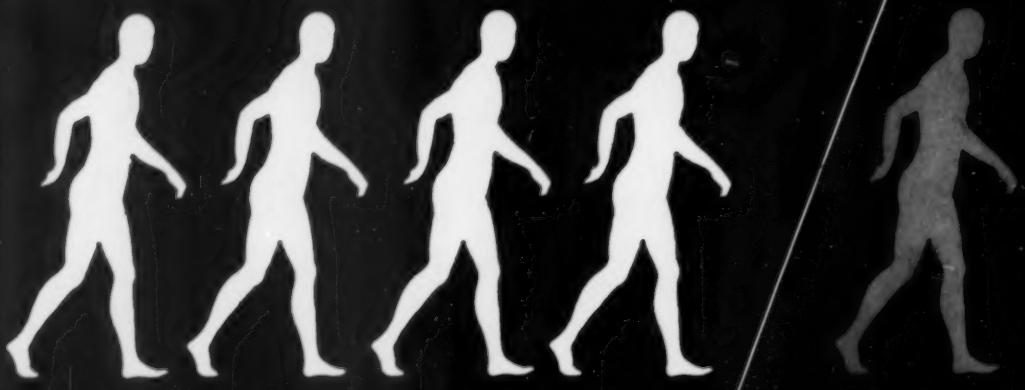

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1. Winsor, T., Humphreys, P.: Angiology *3*:1 (Feb.) 1952.
2. Plotz, M.: N. Y. State J. Med. *52*:2012 (Aug. 15) 1952.
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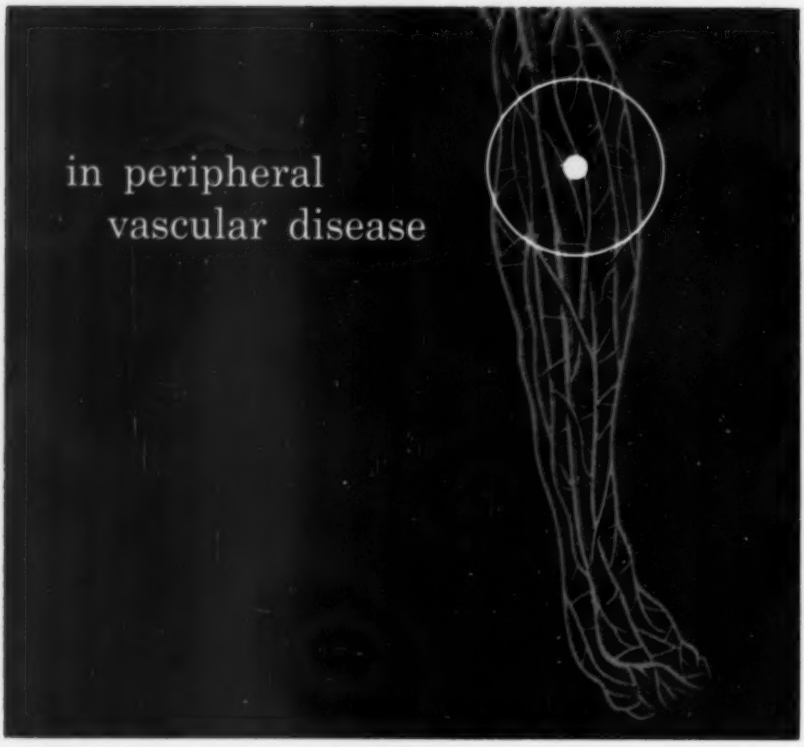

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AUTHORS ALONE ARE RESPONSIBLE FOR OPINIONS EXPRESSED IN THEIR CONTRIBUTIONS

ROBERT L. CRAIG, *Editor*

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BULLETIN OF
THE NEW YORK ACADEMY
OF MEDICINE

VOL. 31, NO. 12 DECEMBER 1955

TRIBUTE TO HAVEN EMERSON, M.D.*

CHAS. GORDON HEYD

To attempt an odyssey of the professional career of Haven Emerson would be quite beyond the present limitations of time and be wholly inadequate to the occasion. Our guest represents the tenth generation of the Emerson family in America; his earliest direct male ancestor came to Ipswich, Massachusetts from Bishops-Stortford in England in 1638. Thus, there is represented over 300 years of Yankee background. Dr. Emerson had the great advantage of a good environmental education, being the son of a physician and reared in the atmosphere of medical practice. The product of this background is about to receive a plaque from The New York Academy of Medicine honoring him for distinguished service to the Academy.

Dr. Emerson was born in the City of New York on October 19, 1874. He received an A.B. from Harvard in 1896 and an A.M. from Columbia in 1899, with a concurrent degree of M.D. from the College of Physicians and Surgeons, Columbia University.

It is interesting to recall, as a time indicator, that in September 1899

* Presented at a dinner, arranged by the Committee on Public Health, preceding the Stated Meeting of The New York Academy of Medicine, February 3, 1955.

Admiral Dewey arrived in New York to receive the adulation of its citizens and of the nation, and now commemorated by the Arch at the beginning of Fifth Avenue. After graduation from the College of Physicians and Surgeons young Emerson became an intern in Bellevue Hospital.

In 1902 Dr. Emerson received an appointment at the College of Physicians and Surgeons as Associate in Physiology and Medicine and served as Assistant Visiting Physician at Bellevue from 1906 to 1914. He was at the threshold of the most expansive period in modern medicine and was a student and participant in the remarkable changes that were taking place in physiology, biochemistry, clinical pathology and medicine. In April 1914 he made a definite decision to engage in the special field of preventive medicine and public health. He was endowed with the rare faculty not only of "supposing" and "inclining to think" but "knowing and believing" not from hearsay but by his innate clear vision.

From 1914 we perceive the continuous interplay of the qualities derived from his background with the expansion of his interest in the problems of the general welfare of the community. In rapid succession he became Commissioner of the Department of Health, New York, 1915-1917; Professor of Preventive Medicine at Cornell, Director of Cleveland Health Survey, 1919-1920, and Professor of Public Health at Columbia, 1922-1940. With this sequential progression there was an interruption to serve as Colonel with the Medical Corps of the American Expeditionary Forces in World War I, and to make the official report on the Control of Communicable Disease in the A.E.F. Other opportunities for service were as a Trustee of the W. K. Kellogg Foundation and as a member of the Commission of Expert Statisticians of the Health Section of the League of Nations.

Our guest has contributed over 200 papers of merit on most diverse studies. One can trace the emergence of his basic and fundamental mind with each successive year. Among his early papers is one on the decapsulation of the kidney and its relationship to chronic nephritis. This was followed very shortly by an excursion into statistical medicine—"The Reliability of Certain Classes of Death Certificates," and then the engaging but difficult task of "A Formulated System of Disease Nomenclature," or "A Survey of Communicable Diseases," or "Diabetes Mellitus and Mortality Statistics."

Perhaps the most substantial evidence of his contribution to human welfare was the appearance of the seventh edition of "The American Public Health Association's Report on the Control of Communicable Disease" (1950). This work, initiated in 1916 and continued personally for thirty-five years by Dr. Emerson as Chairman of the Committee of the American Public Health Association, is a most significant social document and may well stand as his greatest contribution.

Our guest this evening expresses his credo in three significant categories—the continuing and beneficial effect of effective intelligence; the implanting of the superior relation of restraint; and the courage to face problems as they present themselves. His services in the field of public health are widely known and recognized. From the Republic of France, he received the Médaille des Epidémies and Chevalier Legion d'Honneur. From the United States Government he received the Distinguished Service Medal and was the recipient of the Sedgewick Memorial Medal. He received the Lasker award for his contributions to Public Health and Preventive Medicine, and in 1954, the honorary degree of Doctor of Science from Columbia University.

Dr. Emerson's personal characteristics are familiar to you. He has much of the philosophy of his grandfather's brother,—Ralph Waldo Emerson; much of the zeal of Augustine, much of the statistical precision of William Farr. A writer of prose of distinction, a forceful, pleasant, agreeable person, he can still react to the words of Aeschylus "that the years are no barrier to the acquisition of knowledge" and in spite of his chronological years he is still eager, vibrant and inquisitive. "The soul of a crusader in the noblest tradition."

I can view perhaps more objectively his career than those who are identified with his own specialty and it may rightfully be claimed that there is no field of medical activity that has not been touched by the labors of our guest and his contributions to our social order.

The soundness and range of his learning, his ample and capacious intellect, the courage of his judgment and the simple eloquence of his diction—all lend dignity to the ethical concept of his life.

In closing, one may paraphrase Henley,—Haven Emerson has fulfilled himself and we all may share in the rich quiet of the afterglow that is to come.

RESPONSE BY HAVEN EMERSON*

TO TRIBUTE BY CHAS. GORDON HEYD

DR. AMBERSON, Dr. Bailey, Dr. Heyd and all of you precious friends, neighbors and fellow citizens of this proud city of our homes, you must know that the distinctions you have here endowed me with are but the creations of your composite friendships. I am the product of a fortunate inheritance and a lifetime of your companionship.

"Friends are ourselves. Friends such as we desire are not dreams and fables but everyday realities."

"The fountains of my hidden life
Are through thy friendship fair."

We are drawn together for much more than personal reasons of affection, or for the enduring loyalties to our professions and to this symbol of intellectual and public usefulness, our Academy of Medicine.

We gather together this evening to note the progress of an experiment under the umbrella of science and in the manner of one of democracy's traditions, that in public affairs many minds are better than one.

We of the middle-aged Committee on Public Health are dedicated to that most complicated of patients, the people of our home town, this unbelievable community. We try to be the public's friend, as our brothers of the Law say, *amicus curiae*, a friend of the assembled people, as trustees of contemporary medicine.

We are bound together less by like-mindedness than by respect for the open-mind. We seek men and women with the courage to hold "different opinions at different hours, but to be always on the side of truth." We can well agree with Dr. Stephen Smith, the first Commissioner of Health of the City of New York, that:

"Our purpose has the same sentiment as was heard by the shepherds on the plains of Judea at the Nativity. Then the 'good will to men' was announced to be the salvation of the soul from sin by divine appointment; while now we hear that salvation from the sins of the body must be effected by man himself who created them."

* At a dinner, arranged by the Committee on Public Health, preceding the Stated Meeting of The New York Academy of Medicine, February 3, 1955.

Leadership our Committee has enjoyed, excelled but rarely by those who have accepted a public trust.

The bungling public and its overwhelmed government come to us for guidance in a better use of the swift and shifting potencies of medical science and art. We act as buffer between factions, as initiator of novelties of prevention, as booster of medical sciences in human relations.

More than all we offer the forum of our Committee fellowship for the broader education of each other in unusual wisdoms unselfishly expressed.

We harbor no fears, but cherish hopes that what the public, our city, needs for its health can, within our abilities, be satisfied.

It has been written:

"Men and their agencies exist that there may be better men and agencies. The destiny of organized nature is amelioration, and who can tell its limits. It is for man to tame the chaos on every side, whilst he lives to scatter the seeds of science and of song."

We certainly have the chaos; the men and women of today and tomorrow will prove equal to the job.

To quote an essayist of 1850:

"Friendship, like the immortality of the soul, is too good to be believed."

"Every man passes his life in the search after friendship."

"A friend may well be reckoned the masterpiece of nature."

"There are two elements that go to the composition of friendship. One is truth, the other tenderness."

The physician is, if nothing more, an active agent of truth and tenderness.

It is said:

"There are three degrees of proficiency in the knowledge of the world. The first class have common-sense; the second, taste; and the third, spiritual perception."

We do our best to use each of these proficiencies.

The opportunity, obligation and privilege are ours. We intend to use perception, science and common sense to give generously to those who ask our friendly thoughts. Our helpfulness must be through the intellect and the affections.

Problems of the immediate future are man's home, the conditions

of his employment, his emotional relations in the family and among his fellows, and his self-indulgence in drugs for a false sense of escape from unpleasant realities of his own creation. We welcome the wise men who will tell us this evening some of the truths of man's self-drugging, Drs. Lolli and Isbell.

This quartette of social and medical handicaps awaits genius, science, devotion, friendship, and above all hard work for their solution. Our most beloved medical humanist, Sir William Osler, said: "Work—it is the open sesame to every portal, the great equalizer in the world, the true philosopher's stone which transmutes all the base metal of humanity into gold."

I thank you from my heart for your friendship and the truth and tenderness of the characters of each of you.

CITATION AND PRESENTATION OF THE ACADEMY PLAQUE TO HAVEN EMERSON, M.D.*

RENOWNED nationally and internationally for his expert studies of procedures for the control of communicable diseases, his health and hospital surveys, his unremitting efforts to improve the nomenclature of disease and to establish systems for the reporting of morbidity, and his fight for more local health units over the nation, Dr. Haven Emerson has been a leader in New York City as Commissioner of Health, as Professor of Public Health Practice at Columbia University, and as a member of the Board of Health.

For some forty years he has been an active and invaluable member of the Academy's Committee on Public Health. Appointed in 1912, the second year of the Committee's existence, he has served continuously except for the three years 1914 to 1917, during which he was first Deputy Commissioner and then Commissioner of Health of the city. For much of his long tenure on the Committee he has been a member of the Executive Committee.

Ever ready to share his encyclopedic knowledge and the wisdom distilled from his vast experience, Dr. Haven Emerson has participated in most of the Committee's weightiest deliberations. His forthright opinions, expressed in ringing phrases, have been a powerful influence in shaping its decisions on questions ranging from diabetes to rabies, from housing to trichinosis.

For his devotion to the work of the Academy, for his fearless championship of the public health, and for the personal qualities that have endeared him to his colleagues through the years, we his Fellows in the Academy of Medicine gladly do him honor tonight.

The New York Academy of Medicine is proud to present its plaque for distinguished service to Dr. Haven Emerson—educator, administrator, crusader, writer and editor—in recognition of the conspicuous role he has played in the Academy's activities.

* Presented at the Stated Meeting of The New York Academy of Medicine, February 3, 1955.

ALCOHOLISM AS A MEDICAL PROBLEM*

G. LOLLI

Director, Yale Plan Clinic, New Haven, Connecticut; Director, Silkworth Memorial Service, Knickerbocker Hospital, New York, N. Y.

I HOPE to be able to show to you that alcoholism is a problem of confused physiological and psychological urges; that alcohol gives a confused satisfaction to these urges; and that to help the alcoholic means to fight confusion with distinctions and obscurity with clarity.

To begin with, there are three types of excessive drinkers: the addictive drinkers, the habitual symptomatic excessive drinkers, and the irregular symptomatic excessive drinkers.

My presentation will begin with a description of the addictive drinker. It is strange indeed that in a condition such as alcoholism, mention is seldom made of the symptoms and signs of the acute stage. It is as though we were to talk about pneumonia without mentioning the symptoms and signs of the disease when the fever runs high. We shall see later how this reluctance to face the facts of acute intoxication probably arises from some emotional difficulties.

The episode of acute intoxication is a search for blended pleasures of body and mind. It is this search which leads to an understanding of the etiology of the condition.

The reasons which lead the addictive drinker to the first drink are not different from the reasons which lead neurotics who are not alcoholics, or individuals who are neither neurotics nor alcoholics to their first drink. Nor is it true that in the alcoholic the first drink is always followed by more drinks. There are instances when the alcoholic is able to stop after a drink or two. These instances occur when the concentration of alcohol present in the blood stream is either lower or higher than the concentration causing that blended pleasure of body and mind which the addictive drinker seeks.

I spoke of pleasure. We, as physicians, are accustomed to deal with pain. "Pain" appears in the indexes of our medical books countless times,

* Presented at the Stated Meeting of The New York Academy of Medicine, February 3, 1955, as part of the Thirtieth Hermann M. Biggs Memorial Lecture program, under the auspices of the Committee on Public Health. Manuscript received February 1955.

pleasure rarely. "Pleasure" may appear sometimes in textbooks of psychology or of psychiatry. We do not associate the concept of disease with the concept of pleasure. This is one of the reasons why alcoholics meet with our sometimes puzzled, at other times hostile attitudes.

What is the type of pleasure which appeals to the addictive drinker? It is a pleasure which stems from the physiological action of alcohol on body organs and systems and from the psychological repercussions of such action. Warm feelings all over the skin; pleasurable sensations in the mouth; warm feelings in the stomach; a feeling of replenished bowels. Coupled with some specific psychological satisfactions, these are the alcoholic pleasures. Psychologically, there is a possibility of expressing two diametrically opposite drives at once. To love and to hate; to be grandiose and to be meek; to be heterosexual and to be homosexual. These are just a few pairs of opposites which find adequate, simultaneous expression at the pleasurable phase of the episode of acute intoxication. These psychological experiences merge completely with the physiological ones. It is in this merging and in this confusion that the alcoholic reaches his most cherished goal.

Unfortunately (or fortunately), because alcohol burns at a rather constant rate in the body, the pleasure fades away rapidly unless more alcohol is ingested,—a step which the alcoholic proceeds to take. However, he often miscalculates the amount needed and drinks either too little, and thus falls into a state of unsatisfactory tension, or too much and thus falls into a state of stupor. An episode of acute alcoholic intoxication in the addict is a story of countless, repetitive attempts to maintain in his blood stream that concentration of alcohol which satisfies his innermost needs. From this angle, alcoholism has as its opposite not only sobriety but also humanism because prerequisite to humanism is an emotional preparedness to accept distinctions between what belongs to the body and what belongs to the mind.

Besides this peculiar characteristic (be it psychological or physiological, or both) to enjoy confused pleasures, the alcoholic exhibits signs and symptoms which hint of defective homeostatic regulation: instability, low tolerance to stress, and impulsiveness. Because of these traits, he belongs definitely to that group of disturbed individuals who are labeled impulsive neurotics. He uses alcohol as a source of psychosomatic unity, but also in a fruitless attempt to find a measure of stability.

We must keep in mind that these are impatient individuals, rather

than actual patients. They merit our attention because they are the cause of trouble to themselves and to the world they live in. It is easy to surmise that we will see more of their kind in the years to come. Not all of them will be alcoholics. Many of them will have similar personality traits, even though excessive drinking may not be a problem for them.

Addiction to alcohol comes about, therefore, in the quest for a state. It is different from symptomatic drinking, which is a condition hinting of a state from which one desires to escape. Positive search of pleasure, the one; avoidance of pain, the other. There are links, however, between the two conditions. The symptomatic drinker may have latent within him the traits of addiction so that, in the long run, an addictive pattern of drinking may complicate his escape from pain. This is the reason why we definitely favor permanent abstention from the use of alcoholic beverages in all individuals who belong in the alcoholic categories.

Based on the evaluation of the addictive traits, the diagnosis of addiction is easy if one keeps in mind the criterion of blended pleasure of body and mind mentioned above. Just as easy is the diagnosis of symptomatic drinking if one keeps in mind that the latter is governed by an underlying condition. From spontaneous hypoglycemia to schizophrenia, from neurotic depression to toothache, from menopause to psychosexual inadequacies, many and different are the causes of symptomatic drinking.

There is one type of symptomatic drinking which deserves to be singled out. It is the "nutritional" type which is observed in southern European and Latin American countries more frequently than here. Individuals whose caloric intake is low may resort to the use of large amounts of alcoholic beverages as a cheap source of calories. If latent addictive traits are present in them, the shift from symptomatic to addictive drinking is easy. In this special case, alcoholism appears to be a problem of hunger.

That hunger and thirst are two facets of the same problem in alcoholism and that factors not strictly connected with the effects of alcoholic beverages play a role in the condition is indicated by research which has been carried out in recent years. We have been able to show, for instance, that if we compare samples of the Italian and Italian-American populations, we find that Italian-Americans ingest larger amounts of non-alcoholic fluids than native Italians. As for alcoholic beverages, while the drinking patterns of the Italians are more regular and lead to greater consumption of alcohol, the incidence of sporadic

excessive drinking is higher in the Italian-Americans. It is also interesting to note that the Italians like bulk food much more than the Italian-Americans, who show some preference for soft and not too filling foods. These facts, together with the observation that alcoholics, regardless of their national origin, also are not bulk eaters and exhibit a tendency towards over-use of liquid food, cast light on the nutritional root of alcoholism.

The paucity of our knowledge about eating and drinking habits is astonishing. It took the explosiveness of alcoholism and the emergency of the problems it creates to focus scientific attention on the psychosocial aspects of this extreme deviation of normal drinking habits. Thus alcoholism, seen as a deviant nutritional habit, acquires a new physiognomy.

Having spoken of hunger, we have shifted into etiology almost insensibly. We might mention at once a kind of hidden hunger as a suspected cause of alcoholism. A theory postulates that some deficiency in vitamins and minerals may underlie the inordinate craving for alcohol of our patients. Rats kept on a vitamin and mineral deficient diet develop a definite preference for alcohol in an apparently free choice situation. The same rats, restored with proper amounts of vitamins and minerals, exhibit a neutral or unemotional attitude towards the dangerous beverage.

These experiments are open to many criticisms. Vitamin deficiencies seem to affect the rats' ability to utilize carbohydrates. Whenever, besides alcohol, sugar solutions are presented to the deficient rat, he chooses the latter, and not alcohol. Besides, attempts at translating into human terms data drawn from the animal situation appear exceedingly dangerous. After all, rats do not write poetry, or work out mathematical problems, or go to church,—all are activities which seem to have some definite bearing on the problems of alcoholism.

The instability, the low tolerance to stress and the impulsiveness of the alcoholic have led to the hypothesis that some endocrine imbalance, especially affecting the pituitary-adrenal system, is at the root of alcoholism. That some signs of exhaustion of the adrenals may be observed in hangover is obvious, due to the stress and strain of the situation. That these signs preceded the onset of uncontrolled drinking remains to be proved.

What should be understood is that the addictive drinker, has brief

periods of blended pleasure of body and mind during the episode of acute intoxication. These moments, flanked by pain, are reminiscent of some unsatisfied infantile longing, of fixations, or regressions, or both, to that state of emotional development where confusion between body and mind had not yet been superseded by those adult dichotomies which are the hallmark of maturity.

Real or fancied, but still felt as real by the patient, an inadequacy of his childhood relation to his own mother is present almost uniformly. The inadequacy of the relationship does not necessarily imply inadequacy either of the mother or the child. Nor does it rule out physiological factors in the child which might have made him or her more difficult to cope with. What seems true, however, is that this first woman, his mother, appeared confusing to the alcoholic-to-be, unable to give timely relief to his pains, unable at the appropriate moment to interrupt his pleasures. More than anything else, she appeared unpredictable and contradictory. Other women in his life are also unpredictable and contradictory. Almost fatefully, he is attracted towards women of the same type that he first faced. So also are they attracted to him.

Alcoholism, then, is a disorder of the first social experience of the individual which eventually translates itself in adulthood into a disorder of his disposition towards interpersonal relations. Deprived early in life of warm, intimate, and mutually rewarding relationships, the alcoholic has been suffering from, as it were, a taboo on tenderness. Tender experiences are avoided because to a large extent they are felt to be impossible. It has been stated that this taboo on tenderness, besides operating in the field of alcoholism, is one of the main causes of adult neurosis and general social unrest. This taboo seems really more stringent than many of the sexual taboos of our civilized society. It appears reasonable to suppose that the lack of scientific interest in the psychological, social and cultural aspects of hunger may be linked with the fact that the emotional counterparts of hunger are strivings for warmth, for tenderness, for those feelings which so-called advanced societies find difficult to express.

Treatment

The basic goal of treatment is total and permanent abstinence from the use of alcoholic beverages. We have already hinted at the primitive nature of those conflicts which lead to the addictive use of alcohol. Experience has abundantly shown that even those alcoholics who have

undergone a thorough and successful analysis cannot drink in a controlled way. In other words, there is at present no psychiatric or other treatment which might enable the alcoholic to drink moderately.

The nature of the treatment process appears to be the same in all cases and in all situations, regardless of whether the interruption of the drinking pattern occurs as a result of psychiatric efforts or as a result of the intervention of the internist, the social worker, the fellowship of Alcoholics Anonymous, religion or the neighbor next door. In order to keep in check the addictive urge to drink, the individual must have emotional energies available. These energies must be mobilized from every available source. Those energies which are tied to medical problems, to psychiatric difficulties other than those related to the uncontrolled use of alcohol, or to social difficulties, should be liberated, mobilized and used in order to foster a repression of the urge to drink.

There is no uncomplicated case of addiction to alcohol. Even if medical complications are absent, psychological and social complications are present constantly. To work on these complicating factors, often unrelated to addiction, really implies to work on the problems of addiction.

Treatment must deal with acute intoxication, with hangover, and with periods of temporary sobriety. From insulin to pyridoxin, a variety of agents has been offered to the medical profession in order to hasten the rate of oxidation of alcohol and, therefore, to shorten the period of acute intoxication, or to increase the resistance of the central nervous system to excessive amounts of alcohol. If it were possible to find a drug which would hasten the rate of oxidation of alcohol drastically, such a result would be achieved at the expense of the patient's life, because a great increase in the rate of oxidation of alcohol would be accompanied by a marked rise in the individual's body temperature.

The hangover situation exhibits medical and psychosocial aspects. We deal with symptoms resulting from the toxic effects of alcohol on the body; with emotional symptoms of an almost traumatic nature; and with social difficulties whose origin is easy to explain. Hospital care is indicated in most cases. Sedation is required in order to avoid the continuation of the drinking pattern. It should go beyond pleasurable relaxation and bring the patient much needed sleep. Hormonal treatment, especially ACTH, may be effective in some cases in preventing complications, especially of a psychotic nature.

In a period of temporary sobriety, programs of general medical

rehabilitation are effective insofar as they help to make available emotional energies very much needed to keep in check the urge to drink.

Specific medical techniques aimed at the basic problems of the alcoholic have been used for centuries. The conditioned reflex treatment, for instance, was known in a more primitive form to the ancient Romans. In recent years, its popularity has decreased considerably as it has been superseded by Antabuse. We are much in need of a scientific, careful evaluation of this drug, for it poses many unanswered questions. Its present use, in almost homeopathic doses and with avoidance of the test situation, seems to hint more of a suggestive approach than of an effort to create a real barrier against the use of alcohol.

Psychosocial Approaches

A "deep" diagnosis covering the medical, psychological and social aspects of the condition, complemented by thorough planning, and followed by apparently "light" therapy, seems in order. It has been said time and again that the alcoholic should be motivated in order that he be helped. We must keep in mind that the real motivation of the alcoholic is to drink and that our goal as therapists is to place obstacles against his innermost drives.

The qualifications and the roles of the therapist are still open to much discussion. The psychiatrist's role is mostly one of deep diagnosis, planning and sometimes correction of difficulties unrelated to the real problems of alcoholism. The general practitioner's role is a crucial one insofar as the help that he gives to the alcoholic in hangover may represent the first step of a long therapeutic process, perhaps to be carried out in some specialized unit. The role of the social worker has been growing by leaps and bounds. The difficulties that the alcoholic may have experienced with women in the past only make it more advisable that he be exposed to a corrective emotional experience where women may play a crucial role. Of course, the type of woman that can help the alcoholic should be the one whose ability to tolerate other people's pains and other people's pleasures is not open to question.

Alcoholics are best handled in clinics where the combined skills of the psychiatrist, internist, and social worker are focused at the same time or alternately, on the patients' problems. The question whether clinics especially organized for the alcoholic or whether clinics dealing also with problems other than alcoholism should be set up, is still open.

For a variety of reasons, including the fundamental one that it is very difficult for the therapist to withstand the impact of alcoholic patients only, I favor clinics which are not restricted entirely to alcoholics. Clinics for treatment and research on eating and drinking habits seem very much in order to me. A recent experiment along these lines at the Knickerbocker Hospital seems to have been successful so far. Obesity as a problem of uncontrolled urges to eat solid food and alcoholism as a problem of uncontrolled urges to drink fluids, have been linked in the same service. As a result of this emphasis on eating and drinking habits and not on alcoholism alone, problems of excessive drinking of a non-alcoholic nature can be considered. Besides, nutritional habits, eating and drinking habits, represent an easy wedge into the emotional life of individuals and groups. "Emotional adequacy through nutrition and nutrition through emotional adequacy" might be a good slogan for people interested in improving both nutritional and emotional standards.

This approach is visualized as being very fruitful by those who believe that problems relating to the hunger-linked emotions are probably fundamental and far more dangerous than the relatively secondary and derivative problems apparently linked with sexual difficulties.

It is useless to describe here the religious needs of many of our patients and the very favorable impact that religious approaches may have on the rehabilitation process.

Even though this talk is devoted to the medical aspects of alcoholism, brief mention should be made of the fellowship of Alcoholics Anonymous, an organization of former excessive drinkers who, in helping other people to achieve sobriety, help themselves to keep sober. The results achieved by this group are too outstanding to deserve only a limited mention. We all know that, in terms of numbers of rehabilitated alcoholics, no professional group can compete with them. An even cursory analysis of the basic principles of this organization, of the so-called Twelve Steps, leads to the conclusion that they are very sound and that none conflicts with accepted psychodynamic views.

In most states of this country, programs for alcoholics have been developed in recent years. Professional groups cooperate closely with Alcoholics Anonymous without mutual rivalries or hostilities. The instances where misunderstandings are still present seem to result from obscure thinking or from the fact that the unruly protests of the emotions have not yet been superseded by the cool authority of reason.

Prevention and Education

We spoke of taboos on tenderness and of the resulting social isolation and loneliness. Prevention of alcoholism should not suffer from these taboos and operate in loneliness. Specialized education on alcoholism is in order. However, efforts should be made to complement it with education on problems of alcohol, and on eating and drinking habits. By means of education on these habits, the individual comes to favor adult and mature distinctions at the expense of infantile confusions. This is real preparation for humanism. It is education which faces the fundamental problems of our times. It is not enough, as a matter of fact it is useless, to force humanistic education on adolescents unless they are emotionally prepared to accept the distinctions on which humanism is based.

Areas For Research

Before concluding this brief review of the medical aspects of alcoholism, I would like to outline tentative areas for research. This research should not be limited to alcoholism only.

Research points to the fact that the rate of oxidation of alcohol is rather definite and fixed and not easily affected by experimentally induced conditions. Yet it is affected significantly by a meal of solid food or by meal-acting agents. The different rates of oxidation of alcohol on an empty stomach and on a full stomach call for further investigation.

The differences in action of different alcoholic beverages should be investigated also. Little is known about the biochemical constants affecting tolerance to alcohol. That alcohol participates in the metabolism of fats and contributes to the production of cholesterol is known. So also something is known, but not enough, about the mutual relationships between the rate of oxidation of alcohol, oxidation of carbohydrates, metabolism of pyruvate, and thiamin depletion.

Recent experimental and clinical work, carried out by us, points to the participation of alcohol in protein metabolism. Alcohol affects the synthesis of hippuric acid from benzoic acid and glycine. What is even more interesting is that the effect of alcohol on the synthesis of hippuric acid is radically different when alcohol is administered on an empty stomach and when it is administered on a full stomach.

What were labeled as the physiological foundations of neurology and psychiatry have been little explored in relation to the problems of

alcohol. I spoke of pleasures underlying addiction to alcohol. Nothing is known about the encephalographic repercussions of these pleasures. In situations other than alcoholism, the sudden interruption of mild and lasting pleasures leads to electrical "earthquakes." The brain waves revert to childhood patterns or sometimes to patterns which can be observed in psychopaths. Research on the electroencephalographic patterns of the alcoholic in several test situations, for instance after sudden interruption of the ingestion of alcohol, has been long overdue.

More important at this stage than what we have discussed so far is the carrying out of multiphased dietary surveys of random samples of different groups and nationalities. Eating and drinking habits should be studied in detail from the medico-psycho-social aspects and with focus on the dietary record. It is needless to say that the metropolitan area of New York, with its many nationality groups, offers unique opportunities for such studies. The design of specific physiological and psychiatric research is facilitated by the dietary inquiries. For instance, the dietary inquiry of the Italians and Italian-Americans made us much aware of the close ties between the use of alcoholic beverages and meals. Such awareness led to the design of experiments whose aims were to investigate the rate of oxidation of alcohol during the digestive processes and the effects of alcohol on some liver functions. Thus, we were able to show that alcohol affects the synthesis of hippuric acid.

Also from these studies, reliable data about the incidence of alcoholism can be gathered. What we know about this incidence now is drawn from rather complicated calculations. Suffice it to say that in the metropolitan area of New York City, alcoholics are counted by the tens of thousands and that very few facilities are available for helping them. The setting up of many research and treatment centers, either isolated or integrated, is imperative. The operation of these centers calls for the combined skills of many professional specialties.

I hope I have been able to convey the idea that this is an interesting field. It is merciful work which opens golden gates to research in most areas which appeal to us as physicians. Not because it is numerically a large problem, but because it bears heavily on the economic and social welfare of this country, indeed of the world, alcoholism is one of the great problems of our age. There are many individuals who are not alcoholics, but who experience emotional difficulties which, though similar to those of the alcoholic, are less obvious but not less perilous.

MEDICAL ASPECTS OF OPIATE ADDICTION

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It is fitting that The New York Academy of Medicine has scheduled lectures on both alcoholism and opiate addiction on the same night since the problems arising in the two conditions are, to some extent, parallel. Both alcoholism and drug addiction involve the compulsive use of drugs with powerful effects on the central nervous system. Both conditions are associated with, and perhaps due to, a personality problem. In both disorders, tolerance and physical dependence are developed, though these phenomena are more marked in opiate addiction than in alcoholism. In addition, alcoholism is an important factor predisposing to drug addiction. It is, of course, true that the differences between opiate addiction and alcoholism are as great, or greater than the similarities. It is known that the majority of people can use alcohol in moderation without abusing it; it is believed that the majority of individuals *cannot use opiates in moderation*, and that most persons who experiment with opiates become addicted. Long continued abuse of alcohol leads to structural changes in the liver and other organs, largely as a result of the nutritional deficiencies associated with alcoholism. Opiate addiction per se causes no anatomical changes in the body and is not usually associated with frank nutritional deficiency disease. The organic complications of drug addiction are chiefly infections—malaria, hepatitis, and bacterial endocarditis—which result from unsterile injections. In addition, the view which our society takes of the two conditions is different.

The Expert Committee on Drugs Liable to Produce Addiction, of the World Health Organization, has defined an addiction as a condition in which a person abuses a drug to such an extent that the person,

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society, or both are harmed. Other characteristics of addiction include a compulsion to continue taking and to increase the dose of the drug, and, sometimes, the development of tolerance and physical dependence. Under the terms of this "socially oriented" definition, many drugs are addicting: included are the opiates and their synthetic equivalents; most of the hypnotic drugs; agents with central nervous system excitant effects, such as cocaine and amphetamine; bromides; and marihuana. With your permission, I will discuss tonight only opiate addiction.

Incidence

Opiate addiction is a relatively small problem in the United States as compared with tuberculosis, alcoholism or schizophrenia. Apparently the number of addicts in the United States has declined from 110,000-150,000 in 1924[1] to 60,000 at the present time. Addiction to opiates occurs most frequently in males, usually begins early in the second decade of life, and is most frequent in the economically depressed areas of certain large cities. It is now more common in Negroes than in whites.

Etiology

Etiology of opiate addiction is regarded as multifactorial. Social, psychological, and pharmacological factors all play a role in the genesis of this disorder. In a minority of instances, therapeutic use of drugs for relief of chronic pain results in addiction.

Social Factors: The social factors which predispose to addiction are not specific, but are associated with many other conditions such as schizophrenia, high crime rates, and high tuberculosis rates. Such economic factors include poor housing with attendant crowding, low incomes, and poor educational status. Such factors are merely predisposing and not absolutely essential, since not all addicts come from such environments, and only a minority of people reared in such environments become addicts. Poor environment operates in two ways: 1) It is believed to favor the development of personality aberrations, since broken homes and other kinds of insecurity are common; 2) In such unfavorable circumstances, the possibility of extra-legal contact with drugs is greater than in better environments since such conditions are associated with crime of all sorts, including illicit traffic in drugs.

Frequently young addicts begin their addictions while members of juvenile gangs. If leaders of the gang are using drugs, a boy naturally

will emulate his peers, will try drugs, and, depending on his personality makeup, is likely to become addicted. It must be stressed that such illicit contact with drugs is a far more common cause of addiction than is proper therapeutic administration. A person who becomes an addict finds that he has entered a distinct social group that has its own language, customs and code. The fact of belonging to this different society tends to crystallize and fix the addiction, making it more permanent. The addict finds that, if he tries to shun his addict friends, he is lonely, bored, and has nothing in common with the "squares" who are not "hep" to drugs.

The social outlook on addiction in western cultures may also be of great importance. In our society, the addict is condemned and cast out. Therefore, becoming an addict is one means of expressing resentment against society, and is attractive to hostile individuals. Such condemnation and rejection, also, naturally play a role in the notoriously high relapse rate in opiate addiction.

Psychiatric Factors: In the United States opiate addiction is almost always associated with an abnormal personality structure. Whether the personality aberration is the cause or the result of the addiction is unknown. In a limited study in New York City, Gerard and Kornetsky[2] found that the personality patterns of adolescent addicts were more abnormal than those of their unaddicted friends drawn from the same environment. While this suggests that personality problems antedated addiction, it is far from conclusive.

According to Wikler and Rasor[3] the personality aberrations found in addicts may be described in several ways. From a symptomatological point of view,[4] addicts can be classified as having neurotic traits, psychopathic traits, mixtures of neurotic and psychopathic traits, psychoses or, infrequently, as having normal personalities. In this formulation, neurotics are presumed to use drugs to relieve anxiety ("negative euphoria"), while psychopaths use drugs in order to induce an elated state ("positive euphoria"). "Normal" individuals become addicted only in order to relieve pain, while "psychotic" individuals use the drug to alleviate feelings of depression. This particular nosological scheme implies that the choice of opiates by such patients is accidental and that other drugs would serve the same purpose. The development of "physical dependence" is regarded as merely a complicating process which is undesirable from the standpoint of the user but which is not an essential

feature of drug addiction. With the development of physical dependence, the "euphoric" effects of opiates become more difficult to obtain and drugs are then used primarily to prevent distressing abstinence phenomena.

Personality patterns seen in addicts can also be described in psychoanalytic terms.[5, 6] In this formulation drug addicts are regarded as individuals whose psychosexual development has been arrested or has undergone regression to infantile, or even to more primitive levels. Lack of a strong father-figure and presence of an over-indulgent mother-figure is stressed in this connection. As a consequence, the individual has been unable to learn that all his wants cannot be fulfilled in reality and comes to regard other persons, particularly the mother or substitutes for her, merely as objects to be used for self gratification ("narcissism"). Because of the arrested psychosexual maturation, "oral" cravings are most prominent and genital pleasures are devoid of interest. Since such wants can never really be satisfied, frustration results and the narcissistic, oral-dependent person reacts with hostility, which is often directed toward the mother or other women. Hostility may be turned inward on the addict, resulting in self-destructive wishes. In such individuals, frustration is supposed to be relieved by distortion of reality consequent to the pharmacological effects of drugs. Since the use of drugs is condemned by society, the act of drug use constitutes an expression of hostility. Furthermore, since abuse of drugs eventually results in serious consequence, it achieves a measure of self destruction and expiates guilt simultaneously. Other psychodynamic processes are also regarded as playing a role. Self administration of drugs hypodermically is associated with erotic fantasies of various sorts—incestuous, castrative, and so on—all of them of highly symbolic nature. According to the psychodynamic formulation, it is "not the toxic agent but the impulse to use it that makes an addict of a given individual." The particular agent used is not regarded as of prime importance. The predisposition to use drugs is considered to exist prior to experience with the drugs, and repetitive use of drugs is ascribed to the psychological predisposition itself, and the contrast between the elated state produced by the drugs and the disillusionment which ensues when the drugs' effects are dissipated.

A third formulation called "pharmacodynamic" has been developed by Wikler.[7, 8] This formulation, rather than presupposing that the kind of drug used is of no importance, states that specific drugs have specific

effects which may be of specific importance to individuals with specific psychological needs. The opiates are known to reduce so-called "primary drives"—hunger, pain and erotic urges; aggressive, antisocial impulses are also inhibited. Thus it is believed that addicts are individuals in whom the chief sources of anxiety are related to pain, sexuality, and expression of aggression, regardless of the kind of personality classifications used in describing them and regardless of the theories advanced to explain such traits. The pharmacological effects of the addicting analgesics are directly valuable to such personalities.

In addition, as the addiction process proceeds the development of physical dependence creates a new biological need. The satisfaction of this need is relatively simple and is directly and intensely pleasurable, rather than being merely a negative matter of preventing the appearance of distressing abstinence symptoms. As tolerance and dependence develop, motivation to obtain drugs becomes so strong that all other motivations are relegated to positions of minor importance. When this situation has arisen, anti-social, aggressive behavior may be displayed when opiates are not available. The distressing symptoms which occur on withdrawal of drugs also may serve a variety of psychological purposes. The suffering associated with discontinuation of drugs may serve the addict as a means of expiating guilt and leaves him free to relapse, because he has "paid his debt to society." The instantaneous relief of this suffering afforded by opiates serves to heighten the addict's esteem for this class of drugs and causes him to use the drug for the relief of discomfort from any cause. In a sense, the addict becomes "conditioned"—any unpleasant situation calls for an injection. A pleasurable experience, such as meeting an old friend, also requires a celebration, using drugs as a means of heightening the pleasure already experienced.

Pharmacological Factors: The chemistry and pharmacology of drugs which cause addiction of the type similar to that produced by morphine are steadily becoming more complex. There are now five chemical classes of drugs that are potent pain-relieving agents. All of these possess addiction liability. These classes are:

1. The morphine group (morphine, heroin, Dilaudid, codeine)
2. Morphinan group (racemorphan, levorphan)
3. Meperidine group (Demerol, Nisentil).
4. Methadone group (methadone, isomethadone)
5. The dithienylbutenylamine group.

These drugs are used therapeutically, and by addicts chiefly for the effects they produce within the central nervous system. All classes of drugs listed above have common properties, although important differences also occur. They all induce drowsiness, lessen anxiety, inhibit sexual drives, alleviate hunger and relieve pain. These effects occur without mental confusion or motor ataxia. Additional actions common to all these agents, which are usually regarded as undesirable side effects, include respiratory depression, nausea, vomiting, constipation, and itching. Both man and animals develop tolerance and physical dependence to all these drugs following chronic administration.

The actions of these drugs on the central nervous system appear to be diffuse; they affect all levels of integration, although some levels are influenced more than others. A mixture of stimulation and depression is usually seen. Wikler[7, 9] has shown that, in the spinal cord, morphine has little effect on reflexes mediated through two neurone arcs, but depresses the activity of reflexes mediated through multineurone arcs.

The mechanism of the most important therapeutic effect of these drugs, relief of pain, is still not completely understood. It appears to be established that, in humans, elevation of the threshold for perception of "quick pain" plays no role, or only a very minor one. Alterations in the reaction to a painful experience appear to be of far greater importance.[10] Hill and his coworkers[11] have shown that this altered reaction may consist of a decrease in anxiety associated with anticipation of a painful stimulus.

The hormonology of addiction is a field which is only beginning to be explored. It is now known that a single large dose of morphine induces a marked depression in 17-ketosteroid excretion by male patients.[12] Continued administration of morphine results in continued low excretion of 17-ketosteroids and of the 17-hydroxy-steroids derived from the adrenal glands. Abrupt withdrawal of morphine is followed by a marked increase in 17-ketosteroid and corticoid excretion. These findings are, of course, compatible with adrenal depression, testicular depression, or both, during morphine addiction and marked activation of the adrenal during withdrawal. Both glands remain responsive to injections of the specific stimulatory hormones, ACTH and gonadotropin, during morphine administration.[13] This suggests that decreased 17-ketosteroid excretion is due to pituitary depression either mediated by a direct effect on that gland or indirectly by depression of stimuli

reaching the gland from the central nervous system. This view is reinforced by experiments in which a tendency to decreased excretion of pituitary gonadotropin in the urine was observed during maintained morphine addiction. Depression of the adrenal and testes during morphine addiction is only partial. Individuals actively addicted to morphine respond well to stress, throw off infections as readily as nonaddicted individuals, and can, if sufficiently motivated, carry out hard physical labor. The effects of morphine on the endocrine system appear important chiefly because they explain the decreased libido which occurs during morphine addiction and, therefore, are very important in relation to theories of the psychiatric aspects of addiction.

Tolerance and Physical Dependence: Two phenomena, tolerance and physical dependence, are associated with addiction to opiates and frequently referred to as essential attributes of addiction.

Tolerance is a declining effect on repeated administration of the same dose of a drug, or, conversely, a need to increase the dose on repeated administration in order to obtain the original degree of effect. Different degrees of tolerance develop to different effects of the opiates. Tolerance to the toxic, sedative, and analgesic effects can be almost complete, but tolerance to the miotic and gastrointestinal effects is only partial or nonexistent. The degree of tolerance to the toxic effects appears to be almost limitless. Tolerant addicts have been known to inject as much as 5 grams (78 grains) of morphine intravenously in sixteen hours without incurring any serious effects. Tolerance is known not to be due to any great change in the distribution of morphine in the various tissues of the body or to any change in the chemical processes responsible for the destruction, inactivation and elimination of the drug.[14] Little morphine is found within the central nervous system, the greatest part being located in the muscles. No specific change in the percentage of morphine found in various tissues occurs during addiction. A small part of the morphine administered is destroyed in the body. Demethylation of morphine to normorphine is one mechanism of destruction. Most of the morphine (80 to 90 per cent), however, is "bound" or conjugated in the body to pharmacologically inactive substances. Two such compounds are known to exist;[14] both are combinations of morphine with glucuronic acid. The chief site of conjugation is in the liver. The "bound" morphine is excreted into the bile, resorbed from the intestine, and excreted in the urine. The percentage of

the drug bound during addiction is no greater than prior to addiction and so does not explain tolerance.

Physical dependence refers to an altered physiological state brought about by repeated administration of a drug, which necessitates continued administration of the drug in order to prevent the appearance of a characteristic illness. Physical dependence is what the addict refers to when he says he has a "habit", and it is to this particular property to which he refers when he says that one drug is "habit forming" (morphine or heroin) and that others are not (cocaine and marihuana). At least two kinds of physical dependence on drugs occur: first, that which is associated with the analgesic drugs, and second, that associated with chronic intoxication and hypnotic drugs or alcohol. Dependence on analgesic drugs is characterized by signs of autonomic dysfunction, such as yawning, lacrimation, rhinorrhea, gooseflesh, and symptoms reflecting general irritability of the central nervous system, such as twitching of muscles, insomnia, hypertension, and fever. Convulsions and delirium are *not* observed following withdrawal. Dependence on hypnotics and alcohol is manifested chiefly by the development of convulsions and a typical delirium following withdrawal. We are concerned only with dependence on analgesics. Physical dependence is a self-limited process. The symptoms appear in a definite time sequence following withdrawal of the drug, reach maximum intensity at a definite time, and decline at a definite rate. The rate of onset, the intensity, and the rate of decline of symptoms of physical dependence on different analgesic drugs appear to be correlated partly with the duration of action and potency of the particular drug. The symptoms which follow withdrawal of drugs with relatively short lengths of action, such as heroin and Dilaudid, appear quickly, become intense in a short time, and decline rapidly. Symptoms which follow withdrawal of a drug with a long length of action, such as methadone, appear slowly, are never intense, and decline more slowly. Drugs with intermediate lengths of action, such as morphine or racemorphan, are intermediate in this respect. The relative potency of the drug in relieving pain and inducing sedation also seems to be of importance. A drug such as codeine, which is relatively ineffective in these respects, produces only a mild grade of dependence, whereas a potent drug, such as morphine, induces a severe grade of dependence. Within limits, the degree of dependence is related to the amount of drug which the addict is taking. In the case

of morphine, the relationship of dose to degree of dependence is known to be an exponential function,[15] so that dosages of 520 to 660 mg. (8 to 10 grains) daily will induce nearly as severe a grade of dependence as will a dosage of 1300 mg. (20 grains) daily, or more.

The idea that physical dependence is wholly of "psychogenic," that is of psychologically symbolic, origin still persists despite formidable and conclusive evidence to the contrary. Physical dependence on morphine can be induced in either monkeys or dogs. A definite group of changes can be observed in the paralyzed hindlimbs of either addicted chronic spinal dogs[9] or addicted spinal man,[16] and the condition can be induced in dogs that have been decorticated. In such preparations "psychogenesis" can play no role. This statement, of course, does not mean that different individuals do not psychologically react differently to withdrawal of morphine. The emotional response to the experience of abstinence from opiates varies greatly among individuals.

Theories of Tolerance and Physical Dependence: Since these two phenomena seem to be closely associated, hypotheses developed to explain them are usually related. Two conceptions are favored at the present time. According to Tatum, Seevers, and Collins,[17] morphine has diphasic actions—excitation and depression. The excitant effects persist longer than do the depressant effects. Therefore, as doses of morphine are repeated, excitant effects are accumulated, requiring larger and larger doses in order to obtain a sufficient degree of depression to mask the excitant effects. This accounts for tolerance. Following withdrawal of the drug, the excitant effects are released, thus accounting for physical dependence. Recently Seevers and Woods[18] and Seevers[19] have amplified this hypothesis. They suggest that the depressant effects of morphine are due to drug which is attached to receptors on the external surface of the cell membrane. At this site, the drug is supposed to be in equilibrium with the drug in the body fluids, and is readily detached and destroyed. The "extracellular" drug depresses axonal outflow and is responsible for the depressant effects. A smaller portion of the morphine is supposed to penetrate the cells and to become attached to receptors within the cells. The intracellular morphine is responsible for the excitant effects. The intracellular drug diffuses slowly through the cell membrane and, therefore, is dissipated quite slowly. For this reason, the "excitant" effects persist longer than the "depressant" and are responsible for the appearance of the abstinence symptoms. At the

present time, the hypothesis is not testable. There are several objections to the theories of Tatum and Seevers. Codeine has more "excitant" effects than morphine, therefore, dependence on codeine should be more severe than on morphine. Actually, the reverse is the case. Convulsions are the most striking excitant effects of the opiates in animals, therefore, convulsions should be a prominent feature of abstinence from opiates. Actually, convulsions are not observed.

The second hypothesis advanced to explain the development of tolerance and physical dependence is known as the theory of cellular adaptation. It was first proposed by Joël and Ettinger,[20] and has been amplified by Himmelsbach.[21] According to this theory, the administration of opiates brings into play compensatory homeostatic mechanisms which oppose the depressant effects of the opiate. These homeostatic responses become strengthened upon repeated administration of the drugs. Therefore, more and more drug is required to induce the original degree of effect, and, when the drug is withdrawn, the enhanced homeostatic mechanisms are released from the brake imposed upon them by the continued presence of morphine within the body, thus giving rise to physical dependence. This theory is based largely or the fact that manifestations of abstinence are always opposite in direction to those of the direct effects of the opiates. Thus, in the non-tolerant, non-addicted human subject, morphine constricts the pupils, lowers body temperature, reduces blood pressure and causes sedation. Following withdrawal of morphine, one observes dilatation of the pupils, fever, elevated blood pressure and insomnia. In the non-addicted chronic spinal dog, morphine enhances the extensor thrust reflex and reduces or abolishes the flexor and crossed extensor reflexes. After withdrawal of morphine from addicted chronic spinal animals, the extensor thrust reflex disappears and the flexor reflex becomes hyperactive. This work indicated that withdrawal of morphine from addicted animals is followed by hyperexcitability in reflexes mediated through multineurone arcs. While useful, the cellular adaptation theory is actually more a description of affairs than an explanation. In the last analysis, tolerance and physical dependence must be due to biochemical changes within the cells of the central nervous system. The nature of these changes is completely unknown.

There are no tissue alterations, gross or microscopic, known to be directly attributable to chronic administration of morphine which

explain the phenomena of physical dependence and tolerance.

Meperidine Addiction

Meperidine addiction requires special comment because of the widespread opinion that meperidine is not addicting, or is, at least, much less addicting than morphine. The number of meperidine addicts at the United States Public Health Service Hospital, Lexington, Kentucky, has risen from 6 per year in 1946 to 144 yearly in 1951 and 1953.[22] Nearly all meperidine addicts begin the use of the drug as a result of therapeutic administration by physicians, and depend on physicians for their supply of drugs. It is a sad fact that more than 40 per cent of meperidine addicts are physicians, nurses, or other persons closely allied to the medical profession. Physical impairment from meperidine addiction is greater than physical impairment from morphine addiction since it includes confusion, impairment of vision, skin ulcers resulting from the irritative effects of the large amounts of meperidine used by these people, muscle twitching, and even convulsions. Definite physical dependence on meperidine does occur, regardless of whether or not the patient was previously addicted to or has even ever received morphine.[23]

Diagnosis

Diagnosis of opiate addiction is usually easily made on the basis of the history. Most addicts readily admit their addiction. There are no pathognomonic findings on the physical examination, although emaciation, constriction of the pupils, presence of needle marks and tattoo-like scars over the antecubital veins, are suggestive. In doubtful cases, diagnosis can be established by demonstrating physical dependence by either of two methods. The first method consists of isolating the patient from all possible contact with drugs and making periodic observations for the appearance of the characteristic signs of abstinence. The second procedure involves the precipitation of abstinence by subcutaneous administration of the opiate antagonist, Nalorphine, or Nalline.[24] This is not an entirely innocuous procedure, since death can result from injection of too large a dose of Nalorphine in a strongly addicted patient. It should, therefore, be undertaken only after full consideration and after proper precautions have been taken. Preliminary physical examination should be done. Patients with serious organic disease should

not be subjected to this procedure. The patient's consent should always be obtained in writing, and another physician should be present as a witness. Three milligrams of Nalorphine are then injected subcutaneously and the patient observed at intervals of five minutes for the appearance of signs of abstinence. If none are evident after thirty minutes, an additional dose of 5 mg. is given and the observations repeated. If after 30 minutes signs of abstinence have not appeared, a third dose of 7 mg. of Nalorphine is administered and the observations again continued. If the final dose does not precipitate abstinence, the patient is not physically dependent on any opiate, or on methadone, at the time the test is done. A negative test does not exclude the possibility that the individual has been taking isolated doses of opiates at widely separated intervals. In the event the procedure is positive and does result in precipitation of abstinence symptoms, the patient should be given opiates in amounts sufficient to alleviate the symptoms. Detection of morphine or other opiates in urine is helpful, but these tests are extremely difficult and are seldom available.

Treatment

Institutional treatment is always necessary as the first step in the management of addiction. Attempts to withdraw drugs on an outpatient basis practically always fail and are not regarded as good practice. When the diagnosis of addiction is made the physician should offer the patient the opportunity to enter an institution, but should refuse to provide opiates for the patient unless the patient agrees to enter an institution at the earliest possible moment. Temporization on the part of the addict should not be permitted.

The treatment of addiction may be divided into three phases: 1) withdrawal of drugs, 2) physical and mental rehabilitation, and 3) follow-up treatment. Since the etiology of addiction is multifactorial, treatment is also multifactorial.

Withdrawal: Withdrawal of drugs is merely the first phase of treatment and is the only easy one. Unfortunately it is frequently regarded as being synonymous with complete treatment. It is no more rational to consider withdrawal as being a complete treatment for addiction than it is to consider mere "drying out" as being completely adequate treatment for alcoholism. It must be stressed that the illness which follows withdrawal of morphine from addicted persons is a self-limited condi-

tion which, in individuals without organic disease, is never fatal. As long as the treatment involves taking away the drug of addiction, the patient will recover. It follows that no method of treatment should be used which significantly increases the negligible risk of simple abrupt withdrawal of the drug. Examples of withdrawal methods which greatly increase the risk of death, are prolonged narco-therapy with barbiturates, the use of hyoscine, insulin coma, or electroconvulsive therapy.

Although symptoms of abstinence from morphine can be modified by various nonopiate drugs, the only real relief is provided by morphine or by some drug with an equivalent action. A simple and safe principle of treatment, therefore, is to withdraw opiates gradually allowing physical dependence to drop a step at a time rather than suddenly, thus avoiding severe abstinence symptoms. This method is reasonably effective and is absolutely safe. It may be accomplished by simple progressive reduction of the drug of addiction or by substitution of methadone for whatever drug the patient has been taking, followed by reduction of the methadone. Methadone is most suitable because of its long length of action and because it is effective orally. Only two doses of methadone need to be given daily. One milligram of methadone orally will substitute for each 3 mg. of morphine the addict has been accustomed to taking, or for each milligram of heroin, or each ½ mg. of Dilaudid. Initially, methadone is given in sufficient quantities to prevent the appearance of more than mild signs of abstinence. When this dose has been determined, the drug is withdrawn stepwise over a period of three to fourteen days, depending on the condition of the patient and the response. Objective manifestations of abstinence under this system are usually mild but do occur toward the end of the period of reduction of the drug. They gradually decline over the course of thirty to sixty days, finally disappearing altogether. Adjunctive therapy in withdrawal includes the use of small amounts of sedatives during the first two weeks, hydrotherapy, and proper attention to fluid balance and nutrition.

Emotional reactions to withdrawal include anxiety states, hysterical disorders, and reactive depressions. Psychoses seldom occur unless the patient is also addicted to barbiturates. Ordinarily anxiety states and hysterical symptoms yield to simple supportive psychotherapy. Depending on the degree, reactive depression can be more serious and may require isolation, precautions against suicide and, possibly, electro-

convulsive therapy.

Whatever method of withdrawal is used, addicts will complain. They frequently become discouraged and will discontinue treatment against advice during the latter part of the withdrawal period.

Withdrawal of "Medical Addict": A small percentage of addicts are individuals with essentially irreversible illnesses. Excluding patients dying from terminal carcinoma, the most common conditions involve the cardiovascular, gastrointestinal, pulmonary, locomotor, and nervous systems. The diseases from which many of these patients suffer, though irreversible, are slowly progressive or stationary. Rayport[25] has shown that the majority of these patients can readily be withdrawn from narcotics and that their discomfort can usually be managed by other methods.

Rehabilitative Treatment: Following completion of withdrawal of drugs and convalescence from the effects of withdrawal, medical and surgical measures designed to correct any physical or organic defects which may be present must be undertaken. In addition, vocational therapy designed to assist the addict in acquiring new skills or reinforcing old skills should be given. The object of vocational therapy is to permit the addict to rehabilitate himself economically following discharge from the institution. Useful work is favored rather than occupational therapy. A full recreational program is also useful. Most addicts are individuals who have never developed either good vocational or recreational habits, and direct participation in both kinds of activity is of considerable importance.

Psychiatric treatment of addiction includes participation in the activities of Narcotics Anonymous, group psychotherapy, and individual psychotherapy. Recent studies have shown that "acceptability for psychotherapy" of a sample of patients voluntarily admitted to the Lexington Hospital and remaining two weeks or more was better than 40 per cent. This percentage is far higher than previously supposed. Obviously, complete psychotherapy cannot be given within an institution in a period of a few months. The real object of institutional psychotherapy is to give the patient emotional support, some insight into his problems, and, if possible, to encourage him to seek and continue further psychotherapy following discharge.

Follow-up treatment after discharge from an institution is the weakest and least developed phase of the treatment of narcotic addic-

tion at the present time. Ideally, follow-up treatment should involve a complete environmental change for the addict which would minimize his chances of contacting other addicts, economic rehabilitation, continued supervision, and psychotherapy for a two- to five-year period. Such favorable arrangements can be made in only a few cases.

Prevention of Addiction

The most effective method for the prevention of addiction still remains *legal control of the addicting drugs.* Considerable progress has also been made in the international control of the addicting agents, but much still remains to be done in order to eliminate all extra-legal sources of these drugs.

Since addiction essentially spreads from person to person, treatment of addicts is another approach to prevention since it removes a potential source of infection of other persons from the population. Prevention of addiction is also dependent in part upon the development of mental health programs designed to prevent the development of personality aberrations which are associated with addiction. Such programs are only now beginning to be organized, and years will be required before their effect on the incidence of addiction can be assessed.

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THE STATUS OF SURGERY IN THE MANAGEMENT OF CARDIAC CONDITIONS

*Transcription of a Panel Meeting on Therapeutics**

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* Presented at the Monthly Panel Meeting (Third Series), at The New York Academy of Medicine.

MODERATOR DE LA CHAPELLE: The subject assigned to us for this afternoon is "The Status of Surgery in the Management of Cardiac Conditions." During the past fifteen or twenty years the advances in the field of cardiovascular surgery have been unusually rapid and very striking. In 1938 the first successful ligation of a patent ductus arteriosus was performed. Since then the surgical procedures dealing with congenital cardiac maldevelopments have increased in number as well as in effectiveness. This also holds true for the surgical treatment of the acquired cardiac lesions, including those of the valves, as well as of the great vessels. There are probably several pertinent reasons for the rather rapid advancement of cardiovascular surgery during the past decade or two. Among these may be included the following: The patience and courage of the group of surgeons who were willing to go back to the experimental laboratory, the animal laboratory, and spend considerable time in experimental work relating to the production of various structural lesions in the experimental animal, both in the heart and the great vessels, and their subsequent correction by the various surgical techniques that they evolved. Next, the cautious and considered application of these techniques, which they had developed in the animal, to the human. Third, the increasing knowledge and understanding of the principles of cardiopulmonary physiology. Fourth, the availability of antibiotics and last, but by no means the least, the splendid teamwork between surgeons, internists, anesthesiologists and other physicians in the various specialty fields. I think the last is typified to a certain extent by the constitution of this afternoon's panel, namely, the presence of three surgeons and two internists. With this I would like to introduce the members of this panel.

I will introduce Dr. M. Irene Ferrer first, not only because she is a lady but also because she is an extremely important cog in the wheel of the teamwork I just mentioned. She is not only an internist and a cardiologist but also an authority in the field of cardiopulmonary physiology, which is so fundamental and so important in the understanding of the problems dealing with congenital as well as acquired cardiovascular defects. Dr. Ferrer is Assistant Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University; Associate Visiting Physician, First Medical Division, Bellevue Hospital.

Next I would like to introduce Dr. Robert H. Wylie. He is Clinical Professor of Surgery at the College of Physicians and Surgeons, Colum-

bia University. He is also Attending Surgeon at Presbyterian Hospital. At Bellevue Hospital he is the Chief of Chest Surgical Service of the First Surgical Division (Columbia).

On Dr. Wylie's right is Dr. Jere W. Lord, Jr., Professor of Clinical Surgery, New York University Post-Graduate Medical School and Visiting Surgeon on the Fourth Surgical Division, Bellevue Hospital.

On his right is Dr. Frank Glenn, Professor of Surgery, Cornell University Medical College and Surgeon-in-Chief at The New York Hospital.

All of these men are authorities in the field of cardiovascular surgery.

The purpose of this panel is to be of service to you by answering, or at least attempting to answer, your questions concerning the topic that has been assigned to us this afternoon. We therefore solicit your participation in this panel by letting us have your questions. There will be no lectures in this panel and we have not rehearsed. It is strictly informal and as I said, we solicit your participation. I am going to start with some questions that I have available until I begin receiving yours.

I would like to direct my first question to Dr. Ferrer and ask her, what is the physiological basis for the operation of mitral stenosis? It is taken for granted that we refer to mitral commissurotomy, Dr. Ferrer.

DR. M. IRENE FERRER: I think it was recognized from the very beginning by those surgeons who pioneered commissurotomy of the mitral valve that chronic pulmonary hypertension is the physiologic basis for this operation. In other words, as physicians we must decide whether the patient's symptoms are related to the bottleneck at the stenotic mitral valve which in turn produces hypertension of the lesser circulation. As you will see later on, I believe the patient with mitral stenosis may have symptoms not necessarily related to a bottlenecking at the valve.

MODERATOR DE LA CHAPELLE: *In relation to much the same problem I should like to ask Dr. Glenn: What patients with mitral stenosis should be sent for surgical consideration?*

DR. FRANK GLENN: I believe that the best candidates for the procedure are those who have, of course, an established diagnosis of mitral stenosis, who have shown rather rapid deterioration, developing disabling symptoms over a comparatively short period of time. This will usually be amongst patients who are relatively young. The short duration of their disabling symptoms usually means that the changes that have taken place are in a valve that will lend itself to correction. There-

fore I should say that a patient with mitral stenosis, who has been going along more or less on a plateau and then begins to develop severe symptoms of pulmonary hypertension, and general disability should be considered for surgery.

MODERATOR DE LA CHAPELLE: *Dr. Glenn, would you also tell us what you believe are the contraindications to this operation?*

DR. GLENN: We may list the indications and the contraindications. We can be rather specific about some of these and then there must be several factors that rest in between the two. Right off hand, I should say that certainly one contraindication to operation is the presence of a subacute bacterial endocarditis. I feel also that definite evidence of rheumatic fever is a contraindication. Then you must consider the individuals who are in an older age group, who, in addition to their mitral stenosis have changes in their myocardium as well as other conditions that may affect them as far as operative risk is concerned, as for example, severe renal damage. While there are some conditions that increase the hazard of operation, such as emboli, they may also serve as indications. There are some conditions that may be an indication for operation in one instance and a contraindication in another. For instance, pregnancy in an individual who has a history of having had mitral stenosis, who has had great difficulty in a previous pregnancy or who may have developed pulmonary edema in the early months of pregnancy, seems to me to be an indication for operation. However, if that individual has gone on into the later months of pregnancy, it is probably a contraindication to operation.

MODERATOR DE LA CHAPELLE: *Dr. Wylie, would you care to add to Dr. Glenn's comments as to the contraindications?*

DR. ROBERT H. WYLIE: I think involvement of other valves of the heart may be a contraindication to mitral commissurotomy in some cases. Also there is a great question whether patients with mitral insufficiency with mitral stenosis should be accepted for this operation.

MODERATOR DE LA CHAPELLE: *Would you expound on that please, Dr. Wylie?*

DR. WYLIE: Certainly the patient with a blowing systolic murmur, which is transmitted to the axilla, in whom by x-ray film and fluoroscopic examination there is left ventricular enlargement, and who by electrocardiographic tracings has left axis deviation, should not be accepted for surgery. On the other hand, there are some patients who

have the murmur of mitral insufficiency in addition to stenosis in whom we find, upon exploring the valve, that the stenosis is the most important factor in the disability. At the present time this is one of the most knotty problems in making a decision to operate because there is no good method of determining what amount of insufficiency is present from clinical observations or from cardiac catheterization data.

MODERATOR DE LA CHAPELLE: *May I ask Dr. Ferrer how much help she can give the surgeons in that problem?*

DR. FERRER: From a physiologic point of view I agree with Dr. Wylie there is no specific physiologic mark of predominant insufficiency as opposed to stenosis of the mitral valve. To put it another way, we cannot tell from catheterization—and I include in this the wedge pressures of the so-called pulmonary capillary venous contour—which functional disability is predominant. I think, however, we are beginning to get some indications. This is entirely preliminary, but in our opinion, when minimal pulmonary hypertension is found in the presence of a double mitral murmur and when, in addition, you can see a heavily calcified discoid-shaped mitral valve on fluoroscopy, the chances are perhaps 50:50 that the surgeon will find something amenable to reparative measures. A recent report on this subject from the Mayo Clinic states that one-half of those patients who have the double murmur benefited from surgery. They do not give any great details about the physiology of this group but later in the article they do make reference to this same point, agreeing with what we have found in our small group of patients studied at Bellevue Hospital—the calcified discoid valve in the presence of the double murmur is a relatively poor prognostic sign and leads one not to expect much from the mitral surgery.

DR. GLENN: May I ask a question?

MODERATOR DE LA CHAPELLE: Yes.

DR. GLENN: I agree with Dr. Ferrer. I wonder if she would comment on the value of observing the auricle to pulsate under fluoroscopy.

DR. FERRER: Dr. Glenn, I have not been impressed with the value of this finding, either the direct observation under the usual form of fluoroscopy or the more refined techniques which have been particularly well developed in Europe using the densograms over the left atrial borders in the different oblique positions. I do not believe there is any basic information which we can secure by such means.

MODERATOR DE LA CHAPELLE: *In that same light, would you comment*

on the value of angiocardiography in relation to that type of patient, Dr. Ferrer?

DR. FERRER: The angiocardiographic studies are certainly interesting from the point of view of regurgitations through the mitral valve. There is said to be great help in estimating the importance of regurgitation from the observations of the size of the stream which is rejected by the left ventricle into the left atrium. I think these are preliminary studies. Other studies along the same line, including the blue dye techniques, are being contemplated by others, and I think for the present, clinically speaking, that these data must be withheld from our armamentarium with the hope that we may get something from them when studies are completed. They certainly are not definite as yet, in my opinion.

MODERATOR DE LA CHAPELLE: *I have a question from the floor which is at the physiological level. What is to be achieved by commissurotomy if the pulmonary capillary, pulmonary arterial and right ventricular pressures are normal at rest and on effort? Dr. Ferrer, would you like to tackle that?*

DR. FERRER: I would very much like to tackle that. I think that the physiologic state which has been described by the questioner would indicate to me the presence of a relatively unimportant mitral stenosis from the point of view of a block to the exchange of blood between the lesser and greater circulations. I would therefore say that as we know the condition now, the condition of mitral stenosis, there would be nothing to be gained in operating on such a patient.

MODERATOR DE LA CHAPELLE: *Dr. Lord, would you care to add to this discussion?*

DR. JERE W. LORD, JR.: I would like to make one point. I agree entirely with Dr. Glenn and Dr. Wylie and would like to get their opinion on the matter of calcification. Robert Glover in this city in June 1953 brought out an important point, which we have found to be true, namely when the patient begins to have minimal symptoms due to mitral stenosis at that time the mitral orifice has almost reached its full degree of stenosis. Then as time goes by, months or years, depending upon how the patient's myocardium can put up with the extra load, two things take place. Calcium is deposited on the valve margins and the myocardium tends to weaken and fail. With that in mind, those patients whose valves show heavy calcification by fluoroscopy and by x-ray, with involvement of the entire ring, often have, as Dr. Ferrer and Dr.

Wylie pointed out, some degree of insufficiency. Much more important than that from our point of view, at the operating table in several instances, I have been unable to do anything to benefit the patient. At autopsy, in one patient who was not operated upon and in another for whom I could do nothing at operation and who died three days after surgery, it was impossible to enlarge the orifice with any available instrument because the stenosis was not only circular but also tubular. That brings me to the question whether some of these patients who have symptoms and definite stenosis should be operated upon rather than to wait for the development of disabling symptoms. And conversely, when significant calcification is present whether we should consider them as poor candidates for surgery and turn them down.

MODERATOR DE LA CHAPELLE: *You have partially answered this next question but I will give it to you anyway, Dr. Lord, in case there is something additional that you would like to add to it. Does calcification of the mitral valve, recognized preoperatively, present any problem at operation?*

DR. LORD: Yes, plenty! The problem is not simple. As examples of what I have just said I might recount several recent experiences, one of which occurred only last week. In these instances calcium was readily visualized preoperatively and we were assured by our cardiologist that it was present. At operation there was only fibrosis in the antero-lateral commissure, hence it was possible to perform a satisfactory commissurotomy. The remaining heavy calcification did not interfere with that. Therefore had we turned down those patients we would have lost a chance to help them. On the other hand, it is in this group that we may have failures and the prognosis should therefore be guarded until the operation has been carried out and, perhaps in some, we should not operate at all. I don't know the answer and I am interested in what others think about it.

MODERATOR DE LA CHAPELLE: *Dr. Glenn, would you care to comment?*

DR. GLENN: First of all, I agree we should not turn down the patient because of evidence of calcification on x-ray. On the other hand, when you have a patient in the older age group who has calcification, there is usually a long history—long lapse of time since rheumatic fever was present. I think that the chances of helping that patient are not nearly as good as in a younger individual. I should also like to point out that

calcification in men, in my experience, has been associated with a more advanced degree of disability than in women. Generally speaking men come to operation later. For some reason or other they are able to tolerate their disability and they really work in spite of it. The result is that we see these patients, who have exerted themselves a great deal, after they have undergone considerable deterioration that goes with a right heart working against markedly increased resistance for a prolonged period of time.

MODERATOR DE LA CHAPELLE: *Dr. Wylie, would you add to that?*

DR. WYLIE: Only that I agree with both Dr. Lord and Dr. Glenn that calcification is no contraindication to surgery. When such a patient with the murmurs of insufficiency and stenosis is explored and a patent valve, which admits the finger, found, no further opening should be attempted. Insufficiency is the dominant defect of the valve in such a case. Those cases with calcium in the valve, a narrow opening, and a fine jet coming back through the valve, usually have a good result following commissurotomy.

MODERATOR DE LA CHAPELLE: *Here is another question I should like to direct to the surgical members of the panel: Is there any evidence that mitral valves reseal after commissurotomy? Would you like to start off on that question, Dr. Lord?*

DR. LORD: There are several papers in the literature which suggest that it is possible but that it is unlikely. We have only had 61 patients submitted to surgery. One of those we reoperated a year later and although perhaps at operation things were not the most placid for objective observation,—as one always likes it to be, it was my feeling at the second operation that the valve was back to the original size, quite contrary to the way it was at the end of the first operation. He has done well following the second commissurotomy. We had one patient who had heavy calcification in whom we did accomplish a good commissurotomy. He did well. After he recovered from the operation he was able to work, he married and became a father. He worked about 60 hours a week, whereas, preoperatively, he was practically unable to work at all. Two years after operation he began to develop a systolic murmur which had not been there before. It progressed and his disabilities all returned at the end of three years. He died three and one-half years postoperative. Autopsy showed the line of the commissurotomy antero-laterally. The full length on the auricular side was

evident but on the ventricular aspect where there was heavy calcification, resealing had taken place.

MODERATOR DE LA CHAPELLE: *Did you mean to say systolic?*

DR. LORD: Yes.

MODERATOR DE LA CHAPELLE: *How about the diastolic?*

DR. LORD: The diastolic was lessened considerably by the operation. As the systolic murmur developed the diastolic murmur became louder. I believe that with the restenosis there was retraction of the valve margins medially and the development of an associated insufficiency.

MODERATOR DE LA CHAPELLE: *Dr. Glenn, would you care to comment on the question of resealing of the mitral valve?*

DR. GLENN: Yes, I would like to tell you about a patient I had this morning. I first operated upon this patient three years ago. The patient was a 34 year old male, upon whom we accomplished an excellent commissurotomy. There was calcification medially, none laterally. We were satisfied with one commissurotomy. This patient is a garment worker, a garment cutter. He returned to work and for two years was practically symptom-free. A year ago he began to have a little increasing difficulty. I might say that his primary preoperative cardiac catheterization showed an estimated valve area of about one square centimeter. One year afterward it was estimated at slightly over two. About six months ago he was catheterized again when his symptoms were approaching what he had had prior to his first operation and it was estimated at 0.9 sq. cm. I operated on him this morning and I found that he had an eccentrically placed orifice which was at the location of my commissurotomy and that the remainder of the valve which had shown some calcification before was now almost completely calcified. Nevertheless we were able to get an opening over to the septum through the calcified area.

We had another patient, a 25 year old Puerto Rican, who was operated upon about 18 months ago. She is an unusual case in that in addition to rheumatic fever she had skin manifestations suggestive of scleroderma. She had a good result for a period of a year and then rather suddenly had a recurrence of manifestations of mitral stenosis. She was recatheterized. The data suggested findings similar to that prior to operation. She was reoperated upon 18 months after her first operation. She had had a satisfactory commissurotomy in both medial and lateral aspects. At the second operation she had a definite scar at

the site of the commissurotomy and there was further contraction. Nevertheless there was no calcification. We again accomplished a satisfactory enlargement of the valve orifice. Her second operation was done about three months ago and she has had a satisfactory course so far. To date, of over 150 patients we have operated upon, only these two have failed to maintain a satisfactory correction of the valvular stenosis. All of our patients are being closely followed and I think that in time a few may show resealing but more will have a continuation of the process. The same clinical picture may thus reappear after commissurotomy.

MODERATOR DE LA CHAPELLE: *Would you care to add to that, Dr. Wylie?*

DR. WYLIE: I would like to ask Dr. Lord and Dr. Glenn whether any of these patients had evidences of rheumatic activity during the interval between the commissurotomies.

MODERATOR DE LA CHAPELLE: *Would you want to tackle that first, Dr. Glenn?*

DR. GLENN: The first patient I spoke about had no evidence of rheumatic fever, and incidentally there were no Aschoff bodies in his auricular appendage. The Puerto Rican girl, as I recall, did have Aschoff bodies. We discussed at great length in our conferences as to whether or not she might have had episodes of rheumatic fever and I think it was the conclusion of those who had followed her in the clinic that she probably had such episodes.

MODERATOR DE LA CHAPELLE: Dr. Lord!

DR. LORD: In neither of the two patients I alluded to did the physicians consider that there was any evidence of bona fide activity of the rheumatic process. The second patient who passed away within the past several months did have a serious fever during his last few months of life. This fever was thought to be related to a subacute bacterial endocarditis, not confirmed, but he developed his recurrence of trouble long before he showed any signs of fever and possible rheumatic activity.

MODERATOR DE LA CHAPELLE: *Dr. Ferrer, I have another question here from the floor that has some physiological significance, namely, does a good response to digitalis in a patient with mitral stenosis in heart failure favor the so-called myocardial over the obstructive factor?*

DR. FERRER: I don't think necessarily so. However, it should make us cautious in assuming that the patient has predominantly mitral block.

Under the circumstances mentioned I think it might be wise to observe that patient for a further period of time on continued digitalis and see after an appropriate period, let us say of four to six months, if the symptoms are not accelerating rapidly. If they are decelerating, of course, one should wait longer to establish if this medical regimen is indeed the answer to the patient's difficulty. But I think we certainly have seen people with mitral block in congestive heart failure who when digitalized have certainly lost some of their symptomatology but who subsequently have been shown to have predominantly mitral block. I think the failure I am speaking of, I should stress this, is right ventricular failure. Should the evidence of left ventricular failure be present, one would have to re-evaluate the whole picture in terms of active rheumatic myocarditis.

MODERATOR DE LA CHAPELLE: *It will most likely be myocardial, don't you think?*

DR. FERRER: Yes, I do.

MODERATOR DE LA CHAPELLE: *Here is another question we should have asked early in this session, namely, does every patient with the murmur of mitral stenosis require surgery? Dr. Ferrer, I think you might answer that.*

DR. FERRER: I think the answer to that is simple and the answer in my opinion should be No.

MODERATOR DE LA CHAPELLE: *How do the surgeons feel about this?*

DR. GLENN: I certainly agree.

DR. WYLIE: I agree.

DR. LORD: I agree.

MODERATOR DE LA CHAPELLE: It is unanimous. Every patient with the murmur of mitral stenosis does not require surgery.

There is another question here that I would like to direct to Dr. Glenn because he made some remarks in reference to pregnancy and commissurotomy. Someone would like to know how late in pregnancy can a mitral commissurotomy be performed? Dr. Glenn, would you like to try that question first?

DR. GLENN: Yes. I cannot answer the question straight-forwardly because the latest that we have performed the operation has been in the fifth month of pregnancy. We have done ten and there has been no maternal mortality. There was one premature delivery occurring about two weeks after operation and I believe the baby died. The obstetricians

tell us that they think we should not attempt a commissurotomy in the last trimester of pregnancy and point out that if the patient has gone through the first two trimesters, with the exception of the burden that is placed upon the patient at delivery, she probably will do pretty well. We have had several patients come into the hospital in pulmonary edema during the first trimester of pregnancy and I believe most of them have really been near the end of the first trimester. Does that answer the question?

MODERATOR DE LA CHAPELLE: I think so. *Let us try and see if there is a difference of opinion here. Dr. Lord, would you care to answer?*

DR. LORD: I have had no experience with that.

MODERATOR DE LA CHAPELLE: Dr. Wylie!

DR. WYLIE: I would agree with Dr. Glenn, one should not try it after the fifth or sixth month at the latest.

MODERATOR DE LA CHAPELLE: *Would you like to answer that from the physiological basis, Dr. Ferrer?*

DR. FERRER: Physiologic data are lacking on this problem. They are only being accumulated at this time so I think for the moment one must rely on clinical judgment.

MODERATOR DE LA CHAPELLE: I think we will close this section concerning the valvular problem by three questions that are pretty much the same basically. *One questioner would like to know the overall mortality rate of this procedure. Another questioner not only wants to know the mortality but also the morbidity following the procedure. Would you like to start with that, Dr. Glenn, namely the overall mortality rate of this procedure and maybe say a word about morbidity?*

DR. GLENN: First of all, I think, it is fallacious to make a statement about mortality rate for the country as a whole because there are many people who are doing commissurotomies on excellent risk patients and there are others who are doing them on the more or less hopeless group. So there is going to be considerable disparity in the rates. I can give you our own mortality figures—and these patients are selected by a group of about eight of us, cardiologists, cardiophysiologist, the physician, the surgeon, the anesthetist, another surgeon and a pathologist—a mortality of six patients in a series of over 150. I believe we have operated on some patients we should not have and we have gotten by with it, and we have had some unexpected fatalities, two as a matter of fact. I feel a mortality rate of 5 per cent or even a little more is

permissible at the present time. I think that the mortality will decrease as we are able to operate on the properly selected patient early in the process.

As far as morbidity of complications is concerned, they tend to parallel those occurring in other fields of surgery. Accurate preoperative diagnosis and evaluation, proper preoperative preparation, close attention to anesthesia and good nursing care are important factors in reducing the incidence of postoperative morbidity of complications. When these factors and precautions are meticulously observed, morbidity of complications can be kept to a minimum but we should also remember that due to the nature of the condition we shall always have complications as long as we are dealing with emboli, with fragments that will break off. I am sure that, until we can control rheumatic fever, we are going to have flare-ups from that cause, particularly in the younger age group. Of course there is pain, the so-called post-commissurotomy syndrome, which is rather disabling.

MODERATOR DE LA CHAPELLE: *Dr. Lord, would you add to that?*

DR. LORD: Dr. Glenn has certainly hit the nail on the head. The type of patient one selects and the mortality will vary from 40 per cent to zero, practically to zero if one goes from serious to mild ones. I won't discuss anything but our own figures, so you will have the composite group of three of us. We have done 61. There have been three deaths and in all three I could do nothing favorable at the operating table. One was misdiagnosed, had total insufficiency, and she died three days postoperative. One I have previously alluded to was so heavily calcified that we were unable to enlarge the opening. The third had a severe degree of aortic valvular stenosis on whom I should never have operated unless I was prepared to do an aortic valvulotomy at the time. She went into ventricular fibrillation when we opened the pericardium. In a good risk group of patients who are having symptoms but still are not in failure, the mortality is about 1 per cent. In the bad risk group, the totally bedridden and decompensated, the rate is approximately what Harken indicated,—40 per cent.

MODERATOR DE LA CHAPELLE: *You used a phrase, Dr. Lord,—that the second case had total insufficiency. Will you please clarify that?*

DR. LORD: It was recognized preoperatively that this patient had a severe insufficiency. It was also thought she had a stenosis. At operation her auricle and left ventricle were so large that the mitral orifice

would admit all four fingers readily and that there was no stenosis. That was confirmed at postmortem three days later. That case is one reason why I feel that insufficiency is almost a contraindication to surgery if it is more than mild. That is the point that Dr. Wylie made quite clearly a while ago.

MODERATOR DE LA CHAPELLE: That is referred to by some people as a pure mitral regurgitation.

DR. LORD: Pure, without stenosis.

MODERATOR DE LA CHAPELLE: *Dr. Wylie, would you add a word concerning the mortality?*

DR. WYLIE: I would like to add a word concerning mortality. Our mortality rate is somewhat higher than the two already mentioned. It runs around 9 per cent in the overall group. It is interesting to note that in the last two years the mortalities have been, except for one case, entirely related to embolic phenomena. Embolism has been present in 10 per cent of the cases and in half of these has terminated as a mortality.

MODERATOR DE LA CHAPELLE: I am sorry to note that the hands of the clock are turning around rather quickly, therefore I think that we should go on to some of the other important problems related to cardiovascular surgery. I refer particularly to congenital anomalies. *I have some questions here from the floor and the first one is, what are the indications for operation on patent ductus arteriosus? Would you like to take that one, Dr. Lord?*

DR. LORD: We all know of Dr. Gross' important work and also of his indications as they used to be, namely, Streptococcus viridans infections that could not be cleared up, which, with antibiotics, is now less often a problem; failure to grow well, and many recurrent pulmonary infections. But I believe, (and I had a letter from Dr. Gross to this effect some three years ago) that the indication for closure of a patent ductus is its presence in the absence of any contraindication.

MODERATOR DE LA CHAPELLE: *Dr. Glenn, would you care to comment on the indications for the surgical correction of patent ductus arteriosus?*

DR. GLENN: I agree wholeheartedly with Dr. Lord on this point. The presence of a patent ductus is an indication for operation because it can be undertaken, I believe, with a minimal mortality rate and practically a minimal morbidity of complications. It should be done, in my

opinion, some time between five and ten years of age.

MODERATOR DE LA CHAPELLE: *You would also perform it regardless of age. Is that correct?*

DR. GLENN: Well, as you go on up into the older age group you may get into reversible circulation and you are confronted with a situation where you can accomplish little. I have operated on such patients; but in obliterating the ductus the blood pressure fell and therefore I did not permanently close it. In reversal of circulation deaths have been reported. But taking the uncomplicated patent ductus arteriosus, it should be divided or ligated whenever diagnosed.

MODERATOR DE LA CHAPELLE: Thank you! *Dr. Wylie, do you want to make any remarks on that score?*

DR. WYLIE: I won't disagree with that except to say that we have not operated on one or two patients who have been over the age of 45 who had a murmur of patent ductus arteriosus but who had no difficulty from it.

MODERATOR DE LA CHAPELLE: *It wasn't because you were suspicious that they had an associated anomaly?*

DR. WYLIE: No.

MODERATOR DE LA CHAPELLE: *Dr. Ferrer, what do you think about the indications?*

DR. FERRER: I would agree with Dr. Glenn, if there are no contra-indications the patient should be subjected to surgery. Patent ductus and coarctation seem to me, at the moment, the two conditions which are literally cured by the surgeon and probably the only two.

MODERATOR DE LA CHAPELLE: *You mentioned contraindication. Would you please tell us of a few that you had in mind?*

DR. FERRER: I believe the predominant one is reversal of the flow through the ductus which provides the surgeon with a physiologic situation that he cannot handle. I think we might add here parenthetically that we do not know why this latter is true. Maybe Dr. Glenn can give us a word about it. I do not know why it is so difficult to close off the communication between the pulmonary artery and the aorta when the pressure is so high in the pulmonary artery that much blood reaches the aorta from the lesser circulation, or why the patient may not be able to survive this maneuver. I am not at all clear why this situation physiologically is so disastrous in the operating room. Careful studies in the operating theater are needed in this peculiar circumstance.

MODERATOR DE LA CHAPELLE: *Can you enlighten us on that Dr. Glenn?*

DR. GLENN: My arm chair philosophy has been of no help to myself or my associates and I have nothing to add.

MODERATOR DE LA CHAPELLE: *How about Dr. Lord?*

DR. LORD: Nothing.

MODERATOR DE LA CHAPELLE: *How about Dr. Wylie?*

DR. WYLIE: I have nothing to add.

MODERATOR DE LA CHAPELLE: *Any other contraindication? I don't believe you mentioned age. Age is no contraindication as far as you are concerned?*

DR. FERRER: I have none. Because of mechanical difficulties involved, the surgeon may be somewhat unhappy when we send him a ductus over the age of 25, but I think he should try.

MODERATOR DE LA CHAPELLE: I think there might well be mechanical reasons when you see the sclerosis noted around some of the congenital anomalies. *Dr. Glenn, you were going to say something?*

DR. GLENN: I was going to say no surgeon ever turns down a ductus unless there is a real contraindication.

MODERATOR DE LA CHAPELLE: *Another question as to who is the ideal patient for the surgical correction of coarctation of the aorta? I have an idea the answer is going to be similar to patent ductus. Let us be sure. Dr. Glenn, would you start off on that question?*

DR. GLENN: I suppose the ideal patient would be that individual who has had the diagnosis made and reached the age of ten or eleven and has then begun to have an increasing blood pressure and whatever may go with it. Here again I feel that coarctation should be treated surgically when it has been diagnosed and the patient's aorta is approaching adult size. I am sure that the other members of the panel would like to discuss this too.

MODERATOR DE LA CHAPELLE: Dr. Lord!

DR. LORD: Just two comments. I know what Dr. Gross and Dr. Glenn have said about getting a larger aorta to work with, waiting until the age of ten, of twelve or fourteen. We have only done approximately a half dozen patients between the ages of five and eleven and the procedure is certainly technically much easier to do in the younger group around five and six. I have not had occasion to operate upon infants. If you use interrupted sutures the experimental work points to a growth

of the anastomosis pari passu with growth of the aorta above and below. I don't think we should take away the feeling that we should hold off on the child of five and six who has been clinically diagnosed accurately and where there is no contraindication to operation to wait till twelve or fourteen for the aorta to grow to be near the adult size. I wonder if Dr. Glenn or Dr. Wylie agree with that.

MODERATOR DE LA CHAPELLE: Dr. Wylie!

DR. WYLIE: I agree with that.

MODERATOR DE LA CHAPELLE: Dr. Glenn!

DR. GLENN: We are following, I say "we", Dr. Mary Ellen Engle and Dr. Goldberg in Pediatrics in New York Hospital, are following a group, about eight infants. They were infants when the diagnosis was made. All of them had been in cardiac failure, brought out of cardiac failure, and have gone along well since that time. The longest period of follow-up here has been between three and four years. We are keeping in close touch with those children. I am sure I could be persuaded to operate upon them on the indication but if nothing happens I think that we will probably wait until they are eight to ten years of age. Certainly at the age of ten coarctation is much easier to do than it is in the older age group. We have not done any on the infants either such as reported by Kirkland in particular. We have been on the verge of doing it here. About two months ago we thought an infant with whom we had some difficulty in getting out of cardiac failure would be suitable for operation. But we delayed and then the child perked up, improved rapidly and is now at home.

MODERATOR DE LA CHAPELLE: *Dr. Ferrer, would you be willing to give us the contraindications either on the clinical or physiological basis as contrasted with the surgical contraindications in the presence of coarctation of the aorta?*

DR. FERRER: The presence of heart failure is probably the predominant one and should be eliminated preoperatively. I think most of the other contraindications do belong to the surgeon. I would like to add one remark which may seem tangential at the moment but which really is a plea to pediatric services. I understand that there is no routine examination of every newborn as regards femoral and arm arteries. I think this procedure should be introduced into every newborn nursery so that we may do what I think Dr. Glenn is pioneering, namely, establish the diagnosis in these children at birth and then have them

available at the right moment for surgery.

MODERATOR DE LA CHAPELLE: *Another question directed towards this anomaly. What are the results to date of the cases submitted for correction of coarctation of the aorta? Who would like to answer that first? Has anyone any expression? Instead of figures maybe just general terms might be satisfactory.*

DR. GLENN: Let me quote Bob Gross. Dr. Gross says, "You know, I think that doing coarctation is about the hardest bit of work that I do but in following the patients I think it is worth it," and I thoroughly agree with him. When one has a patient with coarctation, often a youngster or a young adult, and one is able to remove this lesion,—which has caused a narrowing of the aorta with a diaphragm with a millimeter opening in it, with no pulse palpable in the lower extremities, or if present the pulsations are delayed,—and if after operation a good full bounding pulse is felt, it makes your back feel a lot better even though you have been working at it for several hours. In following these patients I am convinced that they are, as Dr. Ferrer has indicated, cured. This is a lesion that is amenable to surgery and I cannot emphasize too strongly that we should look for it and we should correct it at whatever the optimum time is, which has yet to be established precisely.

MODERATOR DE LA CHAPELLE: Dr. Lord!

DR. LORD: May I quote from one of my favorite instructors, Dr. Frank Glenn? I have heard him speak on this point and he has published a paper on it. One of his cases illustrates what he has emphasized before. A girl in her late twenties or early thirties, after an excellent anatomical repair apparently had either persistence or recrudescence of the hypertension thought to be on a renal basis, and I believe that situation is not unusual. In our much smaller series, much smaller than Gross', we have seen persons in their late twenties fail to get the fall of pressure which one would like to have obtained. That would emphasize once more the importance of early diagnosis, early therapy and not waiting till a fixed hypertension has developed.

DR. GLENN: Yes, the hypertension is most important. We have one individual at 17, with good postoperative angios, who still has a hypertension. It is a hypertension of 170/90. We have older people in whom the blood pressure has come down. It leads me to believe that we ought to do the operation before the patients have reached adult years.

We have a patient who was operated on at the age of forty who had severe hemicrania and I felt she had an intracranial aneurysm. I was fearful an intracranial aneurysm might rupture at operation. We carried her through the operation uneventfully but she has had little fall of blood pressure, which is still more than 200/100. She lost the headaches and she is doing quite well but her hypertension seems fixed, and I think it may be a "Goldblatt phenomenon." I would be interested to hear what Dr. Ferrer has to say about what the hypertension is due to.

DR. FERRER: I am afraid I have no idea. I wish we did know. I wonder if you have had experience in persistent hypertensive post-operative subjects in the use of medical antihypertensive regimens.

DR. GLENN: Not the new drug. It is now four years since the earliest patient was done and we are about ready at the present time to try a regimen including these new drugs.

MODERATOR DE LA CHAPELLE: Apropos of the problem of persistence of hypertension, a year or so ago one of the younger members of our staff made a search of the literature and unearthed practically nothing. Apparently this problem has not been tackled from either the laboratory or clinical level. It certainly is an important one in view of what you have just heard concerning the number of such cases observed although they are not numerous. *You did not infer that there were a great many, Dr. Lord?*

DR. LORD: I know of only Dr. Glenn's one report. I have heard of other cases at medical meetings but I have not read the reports that have been published.

MODERATOR DE LA CHAPELLE: *Here are several questions all about the same lesion, namely, pure pulmonic stenosis: First, can anything be done surgically for patients with so-called pure pulmonic stenosis? Secondly, what are the indications for this procedure? Would you like to start, Dr. Glenn?*

DR. GLENN: Indeed there can be something done for it. I think I shall let the indications go to Dr. Ferrer. As far as the operation is concerned, the approach through the right ventricle has been satisfactory in our hands. A Brock valvulotome is slipped through and the orifice enlarged by spreading the dilator. Dr. Henry Swan in Denver, has been opening the pulmonary artery from above and clipping out the valve. A great deal can be accomplished. Would you not like to say something about the indications?

MODERATOR DE LA CHAPELLE: This is true of pure pulmonic stenosis as contrasted with the tetralogy of Fallot?

DR. GLENN: Yes.

DR. FERRER: As you have learned from Dr. Glenn's remarks, pure pulmonic stenosis in a large percentage of cases is valvular and not in the infundibulum. If there is narrowing of the outflow tract, the approach must be quite different from that of Dr. Swan's. I believe the indications for surgery in this condition are still in a state of flux. First of all we are now aware that this isolated congenital anomaly is not a rarity, textbooks presently in circulation to the contrary. As you know, it has been said that this, as an isolated lesion, was a rarity and we therefore as medical people were a little bit behind the surgeons. We failed to supply them sufficiently. Of course we now have the physiologic tests to help us out and I think it is sometimes almost impossible to make the diagnosis properly without the clinical physiologic tests. The physical signs may be deceptive. The electrocardiogram may be of no help. The fluoroscopic examination may be only suggestive. That brings me again to the consideration of the indications. As you know, the reason that we are interested in breaking the barrier of the pulmonic stenosis is because the systolic pressure in the right ventricle, or near side of the blockage, is very markedly elevated. I think the highest figure that I know is 217 mm. of Hg systolic pressure in the right ventricle when the pulmonary artery pressure was 13 to 15 systolic. This is just to give you an idea of the pressure gradient. There may be higher figures. It has been said by some that if there is a "mild" degree of stenosis as indicated by the hemodynamics, perhaps one should wait on such individuals. By "mild" hemodynamically some individuals mean if the systolic right ventricular pressure is less than 80-100 mm. Hg. It would immediately occur to you, why should one wait? Physiologically speaking we feel there may be a basis for waiting because in those patients who are operated upon, the surgeons, in rare instances indeed, have been able to correct totally the pressure differential across the valve. In other words, postoperatively there is less hypertension of the right ventricle but it is still very definitely present. This is a problem which has interested the surgeon and physiologist alike and which we hope will be solved soon. Hence I think that physiologic measurements may influence the indications in this particular operation. In other words, if the patient is truly symptomatic, has

difficulties related to the heart, and has a systolic pressure over 100 in the right ventricle at the moment, one might consider such a patient as the best candidate for pulmonic stenosis intervention.

MODERATOR DE LA CHAPELLE: I should like to emphasize that remark of Dr. Ferrer concerning the incidence, both pathologically as well as clinically, and particularly now that so-called isolated pulmonic stenosis is being determined at the operating table. Years ago, not too far back, it was considered to be the curiosity that Dr. Ferrer mentioned. Often it would be listed down around twelfth place in the incidence of congenital abnormalities. I am quite sure its rating is now higher and probably will occupy a position as the third or fourth most frequently occurring congenital anomaly. I think more attention is being paid to the possibility of this being an isolated maldevelopment rather than considering it only in the light of the tetralogy of Fallot or the changes of the pulmonary valve that one meets with in other anomalies. More and more of these cases are coming to surgery. If I gathered correctly from what I heard in Washington at the recent World Congress of Cardiology, the results of these operative procedures for the so-called pure pulmonic stenosis are really encouraging.

We have some questions directed to the problem of the clinical recognition of various congenital anomalies, including interatrial and interventricular septal defects, as well as the three lesions that have been discussed, namely patent ductus arteriosus, coarctation of the aorta and pure pulmonic stenosis. What is the relative importance of two diagnostic procedures, namely, cardiac catheterization and angiocardiography? I wonder if Dr. Ferrer would care to comment on this.

DR. FERRER: The relative values of these two diagnostic procedures are quite different under certain conditions. May I put it the other way around? One uses catheterization data in some congenital anomalies. One certainly uses the angiocardiogram in others. You have heard Dr. Glenn refer, for example, to the coarctations where it seems to me it is absolutely essential to have contrast media studies for the surgeon to do an adequate approach to the lesion. I don't think the question can be answered in a blanket fashion.

Of the common congenital lesions which we encounter, the first which comes to mind is the interatrial which, I believe numerically still stands the highest, and of course we are now speaking of all interatrial communications, including the three sub-groupings. I think the clinical

diagnosis of the relatively uncomplicated interatrial communication is extremely difficult. However, I must immediately say that I think it is also at times quite difficult to make this diagnosis by cardiac catheterization unless great care and attention is paid to the selection of sites of exploration. It certainly can be made in a goodly proportion of cases by the physiologic test, but I think we should all be aware that this must be done with great attention or smaller defects will certainly be overlooked, particularly if the sampling in the right atrial channels is not carried out in a number of places but is limited to a single spot. Clinically, the interatrials, as I said, are the most difficult to diagnose, at least in my experience. One particular help emphasized by the British group has been the high incidence of the incomplete right bundle branch block pattern in these individuals with interatrial communications. However, a report has just appeared stating that an interventricular is another common lesion associated with this conduction defect. Certainly the patent ductus murmur is helpful and I will not dwell on that. The arterial lesions just discussed should certainly have angiocardiograms, but I see no necessity for catheterizing the individual whom you suspect of coarctation. Of course there may be associated lesions with any one anomaly and when this is suspected, of course the physiologic study would be beneficial.

MODERATOR DE LA CHAPELLE: *It might be interesting to ask our surgical colleagues what they think about this problem. Does anyone care to comment, Dr. Wylie, Dr. Lord, Dr. Glenn?*

DR. LORD: Just one comment, to quote Dr. Gross again, I believe he feels that angiocardiography is not necessary in the great majority of coarctations. We have had it done in about two-thirds of the patients we have operated on and false information has sometimes been obtained, namely, the presence of a long narrow point of block. Grafts have been made ready but at operation the suspected condition has not been found. On other occasions the reverse has sometimes been true. I have come to feel that angiocardiography is of little value and is sometimes misleading in the ordinary case of coarctation.

DR. GLENN: A little controversy would be a good thing. We are getting along here too well. I am very fond of angiocardiography for the coarctations and I would like to have it because I think it tells me where the coarctation is. At the same time I must admit, as Dr. Lord has pointed out, that we do misinterpret things sometimes. Not long

ago we had what we thought was a defect of about 4 cm. and Dr. Lazerin, who is sitting in the audience, provided us with a graft. When we explored the patient we didn't need a graft. Of course, that didn't hurt anybody's feelings. On the other hand, there are coarctations other than those in the usual location near the ductus and it is of great value to know exactly where. We have recently had one that I could do nothing for, that was below the diaphragm, actually just where the renal vessels come off. Incidentally, we did not do an angiocardiogram in this case because the patient was quite a small child and I felt that we could omit it. There have been deaths reported.

DR. LORD: I would like to ask Dr. Glenn about that patient. I was in another city at a well-known institution watching a coarctation done. The x-ray was shown and the patient's history given. Everything seemed typical except that there was a good aortic knob. The patient was opened as usual, through the fifth rib. The coarctation, however, was near the diaphragm, hence the chest was closed and two weeks later the patient was reoperated upon through a lower incision. There was obviously a good aortic knob present and it is never seen in the presence of a coarctation at the usual site. I believe it would be present on the x-ray of your child with the abdominal coarctation.

MODERATOR DE LA CHAPELLE: Which you could see even without angiocardiography.

DR. LORD: Which you could see with the usual posterior-anterior x-ray.

MODERATOR DE LA CHAPELLE: *Dr. Wylie, do you want to enter the controversy?*

DR. WYLIE: No.

MODERATOR DE LA CHAPELLE: Our time is running short. *Here are four questions, all directed to another problem in relation to acquired disease. I think this one question will probably cover all the others. It is a rather broad one: Please outline the present status of surgery and revascularization of the myocardium in coronary heart disease. I think that covers everything, including the question relating to the procedure of pericardiectomy, pericardiopexy, so on and so forth. Would our surgical colleagues care to answer the question of the present status of surgery in revascularization of the myocardium in coronary heart disease? Who would like to start that one? Maybe we ought to call up Dr. Beck in Cleveland.*

DR. LORD: I don't know whether this reflects the experience of the other men and lady on the panel but I am from Missouri, figuratively speaking. I think we have no evidence yet that those operations in the experimental animal have any real value and since the human is so difficult to study from that point of view, I think it behooves us to go very slowly in that direction for a while longer.

MODERATOR DE LA CHAPELLE: Would you like to add also how gracious Mother Nature is in putting down her own collateral channels? *Dr. Wylie, Dr. Glenn, any remarks about revascularization, its present status?*

DR. WYLIE: I agree with Dr. Lord, various attempts, various methods used to revascularize the heart have certainly not brought forth any outstanding clinical results that we can depend upon at the present time.

DR. GLENN: May I make one comment? I quite agree, but it seems to me that this is the No. 1 problem that confronts everyone who is interested in heart disease at the present time. Therefore let me make a plea for any experimental work done on this problem which I believe should be supported wholeheartedly. My attitude is that no matter how poor I may think the idea is, if it has not been tried out I believe someone should try it in the experimental animal. We should be careful though about trying to transfer the results obtained in experimental work done on the dog to the human being. I would mention the experiments of Weinberg, which have been repeated in part, in our laboratory in which the internal mammary vessel is transplanted into the wall of the left ventricle. After a period of six weeks you can get a beautiful arborization from the end of that transplanted vessel and branches of it, but thereafter it begins to wither. It disappears. This is a fundamental difficulty in our experimental work of trying to introduce a new blood vessel into the heart. We can get an arborization but we are unable, at least I and my co-workers in our laboratory are unable to get this to persist. Dr. Weinberg has had greater success in his animals and he has been doing the procedure on patients and we should watch it with great interest. But appraising the result of experimental work which is evident at the end of six weeks, may give one an erroneous idea. These experiments need to be carried on for a long period of time.

MODERATOR DE LA CHAPELLE: With the permission of the panel members I should like to refer the three or four physicians who asked these questions concerning this problem to the November 27, 1954 issue

of the Journal of the American Medical Association, page 1226, which contains the article by Dr. Beck on operations for coronary artery disease. *We have some additional questions. It is obvious that someone has been reading the Saturday Evening Post for this week because in it there is an article on hypothermia. They would like to know the status of hypothermia in the operative procedures which we have talked about this afternoon and also the question of so-called cross-circulation. Would anyone care to comment on these two new procedures? Hypothermia first. I suppose our main champion of that procedure at present is Dr. Swan of Denver. Dr. Glenn, would you like to comment on it?*

DR. GLENN: With the anesthesiologists the surgeons are using hypothermia in the laboratory and we are about ready to embark upon it in the operating room. I think it is sound. I believe everyone must work out his own method and it is not to be entered into lightly. I am encouraged by the work that has come from Crafoord in Sweden in which he has used his pump and hypothermia with producing fibrillation and then defibrillating the heart. In the past week or so he has used hypothermia for the removal of a myxoma from the right auricle. He also used a pump which I suppose resembles most closely the one devised by Dr. John Gibbon, though not as complicated and was able to accomplish this very remarkable feat.

MODERATOR DE LA CHAPELLE: *Would you care to add to that, Dr. Lord? Dr. Wylie?*

DR. LORD: No.

DR. WYLIE: No.

MODERATOR DE LA CHAPELLE: As many of you know, hypothermia and cross-circulation and several other new procedures, are being used in the surgical correction of these congenital anomalies and also those conditions of acquired etiology. If there is no further comment, it is time to close and I would like to thank the members of the panel who have contributed so freely to this discussion on the status of surgery in the management of cardiac conditions. I am certain that all of you have concluded by this afternoon's panel that the surgical management of many of these cardiac conditions is here to stay. In fact we can face the future knowing that many more techniques will be forthcoming for the correction of both congenital anomalies and acquired cardiac conditions which to date have not been submitted to surgery.

ROBERT ABBE: PIONEER IN PLASTIC SURGERY*

RICHARD B. STARK

WHEN Robert Abbe died March 7, 1928, it was written of him: "During his years of service, Dr. Abbe performed thousands of operations, many of them of the most serious and difficult nature and deservedly won the reputation for himself of one of the world's most able surgeons."[1] This inventive and industrious, this gentle, human and whimsical man who loved humanity and the arts alike achieved his position as one of the great surgeons of his time because of a philosophy of genius which he himself voiced so clearly; "[It] remains for [us] to help clear up the unfinished problems [in surgery]. The honor will surely come to someone, and why should not you or I be the one to grasp the apparently incomprehensive idea and put it in comprehensible language?"[2]

Living in the last half of the 19th and the first quarter of the 20th centuries, Robert Abbe entered medicine at a time when the major foundations of surgery had been established: anesthesia, knowledge of the role of microorganisms in infection, and aseptic surgical technique. Abbe's inquisitive and inventive nature contributed most to his development. Beyond, however, was a boundless energy and a persistence which achieved that which it began. And there were softer qualities,—humanity, a sense of history, and a love of the arts,—which made him a distinguished man of his day. He was beloved for a buoyancy of spirit and a sense of humor which was leavened by lightness.

Robert Abbe was an outstanding general surgeon who wrote prolifically. His surgical papers covered such diverse anatomic sites as the thyroid gland, large and small intestine, appendix, chest, hand and such etiologic problems as carcinoma of the mouth, aneurysm, harelip, agenesis of the vagina and ankylosis of the temporomandibular joint. He was a founder of radiotherapy in America and wrote many articles in the

* Presented before the Section on Historical and Cultural Medicine at The New York Academy of Medicine, March 9, 1955. Manuscript received May 1955.
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Fig. 1—Robert Abbe as he appeared when he lived at 7 Dutch Street and attended the New York public schools.

Fig. 2—Robert Abbe as a student at the New York Academy, later City College of New York. Abbe spent a year following his graduation teaching geometry, mathematics and drawing.

Fig. 3—Robert Abbe as he appeared as a young practitioner of medicine. He opened an office for a short time on Fourth Avenue, but later continued to live, as well as practice, at 32 East 20th Street.

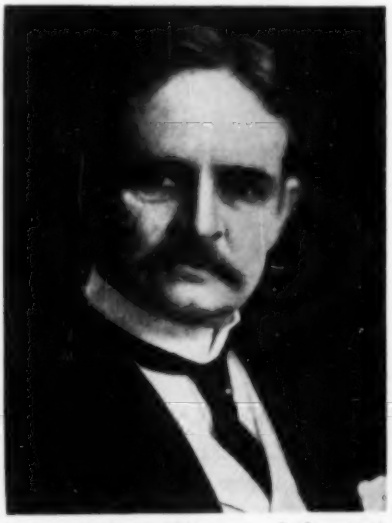

Fig. 4—Robert Abbe, one of the great surgeons of the world during his day, as he appeared before the onset of Paget's disease.

field of neurosurgery. In the field of general surgery, his surgical papers encompassed the subject of a new type intestinal anastomosis, the use of catgut sutures, exploration of the common bile duct, appendicitis, peritonitis, gallstones; and, in the field of neurosurgery, such subjects as an operation for a spinal cord tumor, chordotomy for the relief of pain, tic douloureux, paraplegia; and, finally, in the field of radiotherapy, upon the therapeutic uses of radium and upon an ingenious method of locating disseminated radium when its container had exploded.

The inquiring way in which Robert Abbe approached a new problem to seek its solution is well illustrated by his own words: "A man came to me some years ago who had had both hands blown off by dynamite. He insisted I should graft new hands upon him. I told him it was absurd: the thing could not be done, it had not been done. However, it stimulated me to make a lot of experiments on cats and dogs and sheep. I learned many things that almost forced me to try to do it, but I never did.

"Another season a man sent from the seashore a letter (which I never answered) saying: 'We have heard of your ability to graft skin. We wish, my wife and I, that you would perform a little operation for us. Her hair is straight and mine is curly. What she wishes is a lock of the hair of my forehead, upon hers.' "[3]

In the light of recent advances in vascular surgery, it is interesting to learn of Robert Abbe's research in this field.

"During the summer I made a few experiments at the Carnegie Laboratory, with the assistance of Dr. Theodore Dunham, and through the kindness of Professor E. K. Dunham.

"To see whether a thin glass tube would be tolerated in a sterilized state within an artery, I made a number of half-inch pieces to suit the caliber of dog's femoral, constricted them very slightly to an hour glass shape, and smoothed their ends by heat, so that no surface roughness should induce clotting. Cutting the femorals across, I tied each end over the tube with a fine silk thread, and tied the thread ends together. Primary union resulted, and the dog's legs are as good as ever.

"I feared, however, that the artery might have become blocked in this case, and that collateral circulation had nourished the limb. I therefore cut one out to see, and tied the femoral above and below. The tube was free in a dilated end of the artery, and slow endarteritis had sealed it below. Whether this would necessarily occur I decided to

Fig. 5

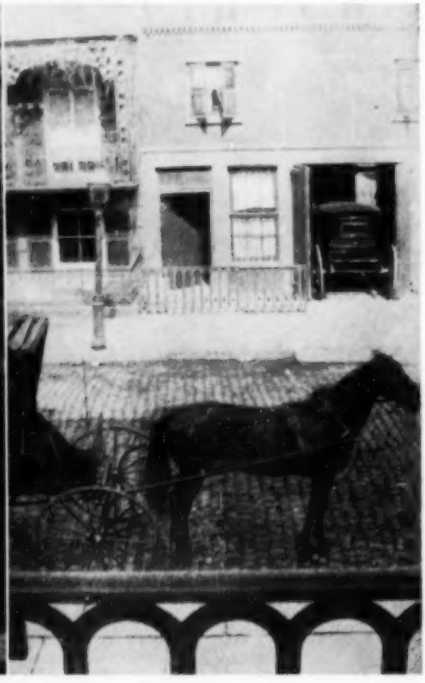

Fig. 6

Fig. 5—Robert Abbe's home and office at 32 East 20th Street. The Theodore Roosevelt family lived down the street from the Abbes.

Fig. 6—Robert Abbe's carriage drawn by "Ben" outside of the Abbe home and office, 32 East 20th Street.

see by putting a glass tube in the aorta, where it seems as if collateral circulation could not save the limbs. I chose a cat, whose abdomen I opened and whose aorta I cut across, clamping lightly above and below. Into this I tied an inch of very thin glass tube sterilized by boiling, and filled with water just before inserting into the lower end, so as not to have air emboli. That cat made a perfect recovery, and after four months I show you him tonight, fat and strong, with a glass tube in his aorta.

"Four months ago I added one step more to the experiments. I dissected out the brachial artery and vein near the axilla of the dog's fore limb, and, holding these apart, amputated the limb through the shoulder muscles and sawed through the bone, leaving the limb attached only by

the vessels. I then sutured the bone with a silver wire and the nerves with fine silk. Each muscle I sutured by itself with catgut, making a separate series of continuous suturing of the fascia lata and skin. . . .

"Thus, we see that, if in an amputated limb an artery can be left, the limb will survive the division of everything else. And further, it may be asserted that if an arterial supply can be restored to a completely amputated limb, *that* limb also may be grafted back to its original or a corresponding stump.

"Up to the present I do not feel that we have incontrovertibly proved that arterial continuity can be restored by a glass tube in all cases. But it is not impossible that, if slow proliferating endarteritis shuts up the main artery in a few weeks, the anastomosis through the soft cicatrix of vascular muscle and skin may be able, by the recuperative power of Nature, to take up the nutrition and ultimately carry it on."[4]

Thus, Abbe utilized this glass tubing as a patent cylinder as contemporary cardiovascular surgeons would use an homologous arterial or an autogenous vein graft. It is interesting to note that this basic principle of amputation experiment is that inherent in transposition of a digit, described by Bunnell[5] and popularized by Littler,[6] in which the index finger is severed completely, except for its neurovascular bundles, and transplanted to the thenar eminence.

Of his experimentation and inventiveness it can be said of this man that he was amongst the earliest to utilize "instantaneous photography" in 1884. He used Lumiere color plates shortly after they were marketed in 1907, achieving some lovely results artistically.

Robert Abbe's love of experimentation lasted all of his life. In 1920, at the age of 69, he flew from London to Paris in one of the earliest post World War I air transports. His observations reveal a warm sense of humor, as well, as he reported in his diary at that time: "Taxi 11.00 a.m. to Cricklewood, twelve miles. Ten acre field—big airdromes. Two large Handley Page's 60-ft. span, sitting like two butterflies just lighted on the grass side by side warming up their trembling propellers. Twelve o'clock 'all aboard.' Slam goes the door on 7 prisoners—buzz go the propellers—like mad but we sit still. Now we slowly move along the grass, bumping lightly, going faster and faster down the field. We turn about scarcely touching the grass, going back over the same ground, but now in the air, mounting rapidly over airdrome, over fields, now 2000 ft. over London with a sense of urgent push through the air.

Fig. 7—Photograph of the old homestead, "Dog Hill", at Windham, Connecticut. Robert Abbe returned to Dog Hill to spend his summer vacations during his childhood.

Fig. 8—An instantaneous photograph at Coleman, New York. Robert Abbe was amongst the earliest to use the camera to record action. Amongst the earliest attempts was that of Muggeridge in 1878. Action pictures by Robert Abbe date from 1884.

Fig. 9—Another action photograph termed "instantaneous photography" in 1884.

Exciting and charming. Nothing unpleasant in this bird-like ascent. London looks like a mosaic. Then minutes more we are over the Thames. A little push now and then. A little lurch now and then. A humming vibration and roaring of propellers all the time. Very musical notes of every tone. A huge organ is not finer in the spirit of the thing—roads are like chalk marks and fields like a patch quilt of every pleasant color, green, buff, brown, grey—vastly pleasanter than railroad and no dust—12:35. Not the least sense of dizziness or nausea. Cotton not needed in ears. Can talk if we speak close to the ear.—A little moth-like shadow of our machine travels below us on the grassy fields—a mere speck—nearly over the sandy beach—breakers below us on the Channel shore. French fields contrast with English by being tilled in right-angle shapes like long strips of garden, planting four or five side by side—while English are more triangular or irregular patches—said to be due to French habit of dividing among children equal strips for inheritance. —One has now lost all sense of insecurity even when an airhole makes the machine go bump or twist—3.10. Paris in sight. Eiffel Tower—motor starting very fast. Getting lower and lower, 200 ft. above ground, one gentle bump on the grass, engines slowing and machine guides smoothly on the grass, easier than in ascent. Taxied right up to the hangar to stop—Le Bourget, France."[7]

Later Robert Abbe wrote his niece, Helen Louise Howson, "We stepped aboard a little pasteboard bird and soared like a lark, but with not so pretty a humming tune. We went up to the sun almost and flew straight to Paris in three hours, over London, over the Thames, over the fields, over Folkstone, over the Channel, over Boulogne, over Etaps, over Abbeville and over bonny France. There we dropped into a field as a meadowlark would if he were looking for grasshoppers. Then we were in Paris at a big hotel, where if someone had not talked English, I should have gone mad—MAD—yes 'mam.' "[7]

It was upon this trip that Robert Abbe attended the meeting of the International Surgical Society in Paris. He made this comment in his diary, "Minister of Public Instruction had a good nap! Nearly broke his neck in public, but woke up in time. About 200 surgeons. Hot stuffy room. Rather stupid speakers. . . .

"Resolved, foreign speaking congresses no good.

"Resolved, probably will never attend another.

"Resolved, to speak briefly and to make my point clearly when my

Fig. 10—Photograph by Robert Abbe of his home and office at 11-13 West 50th Street upon the day of the Great Blizzard of 1888.

Fig. 11—Robert Abbe sketching at Bar Harbor, Maine.

turn comes to speak Thursday.

"Resolved, to walk out and get fresh air."[7]

Abbe kept two swans upon a small lake at his home, Brook End, in Bar Harbor, Maine. With characteristic whimsy, Robert Abbe called the handsome birds "Pierre" and "Marie" after the Curies in Paris.[8] He loved to send short poems or rhymes to his family at Christmas time. Shortly after the war, upon the European trip with his brother-in-law, Hubert Howson, Dr. Abbe and Mr. Howson visited the battlefields where Robert Abbe made this entry into his diary: "Walking in the garden of the excellent little hotel at Mount Faucon where we had an automat lunch, young ladies helping the old surgeon, there is found among the gooseberry bushes a rusty bayonet, which was captured by the Allied forces of Howson and Abbe after a fierce assault on the guide with a silver dollar. A dispute arose, 'was it a German weapon or the bread knife of the crown prince?' Later the junior member of this illustrious firm was made referee and found U.S. on it 'being very particular to inspect boots and buttons at inspection drill,' and being of a legal turn of mind decided that belonged to one of 'Pershing's own'; hence, to the government salvage department, hence it was boodle, hence it was swiped."[7]

When Robert Abbe moved from his home on 11-13 West 50th Street to the Dalhousie Apartments upon 59th Street, he had what he termed a "house cooling party" to which about 25 relatives and friends were invited. It had occurred to Robert Abbe that this was the logical antonym of the "house warming party." Each of the guests was given a small memento of the house when he left the party.[8]

Robert Abbe was an early enthusiast of the art of photography. His black and white pictures showed a careful selectivity as far as subject matter was concerned with a sure sense of composition. His bold experimentation showed itself in early color plates of the Lumiere type, flash pictures, and photography of action.

Amongst the earliest attempts to depict action by means of a camera were those of Edward J. Muggeridge, who, in 1878, photographed a horse in full gallop. Other early attempts were made by Thomas Eakins, the American painter, who, in 1884 and 1885, photographed a boy walking.[9] In these early experiments the wet plate process was replaced by gelatin-dry plates. With the gelatin plate the photographer no longer needed to have a dark room at his elbow as the plates could be pro-

Fig. 12

Fig. 13

Fig. 12—Water color portrait of Hubert Howson, Jr., Robert Abbe's nephew, as painted by Abbe.

Fig. 13—The painter J. W. Alexander taken by Robert Abbe with flash photography in Abbe's office. Note the moc'els of hands made by Abbe illustrating a lobster claw deformity and several hands with Dupuytren's contracture. Abbe described these conditions in his surgical writings.

cessed at any time after they had been exposed. With this innovation Robert Abbe was able to make some of his startling "instantaneous photographs."

Color photography was experimented upon as early as 1827 by Daguerre. However, it was not until approximately 1890 that color prints were developed. In 1903, the brothers Lumiere developed their *autochromes* which were put on the market in 1907.[9] This plate was covered with minute grains of starch which were dyed in primary colors and spread over the surface. Shortly afterward, Robert Abbe experimented with these plates, and some of his best color photographs of Bar Harbor date from 1911.

Early flash photography utilized the magnesium flare, a dangerous and unpredictable inflammatory powder. This was replaced by flashlight powder, a mixture of powdered magnesium, antimony sulphide and potassium chlorate. Not long after its advent Robert Abbe was

using flash powder to photograph family groups within the home.

Always a lover of the arts, Robert Abbe became a friend of the painter J. W. Alexander, who was a friend as well of Abbe's sister, Helen. Alexander was a well-known graduate of the Art Student's League, who became a close friend of Robert Abbe. Alexander had painted a most sympathetic portrait of Helen Abbe. Later, as Abbe developed sureness with Lumiere plates, he photographed Helen in color posing as she had for the Alexander portrait. From this close alliance, Abbe became interested in painting in water color, and he produced several extremely good portraits of his brother-in-law, Hubert Howson, and of his nephew, Hubert Howson, Jr. A lover of flowers, Abbe made his garden the subject of many water-color paintings.

Because of his concern for his fellow man, Abbe was disturbed by the carnage of World War I. In 1920, when in Europe with Hubert Howson, Abbe visited the Crystal Palace in London to see the painting "Gassed" by Sargent. This painting was made at a dressing station near the recent battle at Barry Sur Bac in August, 1918. Abbe made this entry into his diary: "A thousand men were temporarily blinded and lay in two rows near the hospital in all attitudes of pain. In the middle passageway are groups of 6 to 10 who are being led by a Red Cross worker. Each man with eyes bandaged held his gun and coat in one hand and the other on his neighbor's shoulder. The blinded are told to lift their feet at a cross plank and naturally lifted way up for surety."[7]

Visiting the battlegrounds, Abbe travelled through Rheims, the Argonne cemetery, and Verdun. He wrote a poem at that time of which this is a part:

"Where silence now succeeds the din
And clash of arms of brutal man
The flowers with each other vie
To cover up the scars of pain.
The ground we tread is hallowed here
By suffering inconceivable.
Our brothers sacrifice year by year
Vicarious, unbelievable;
This year's flowers and this year's birds
And this year's sun must know the pain
That never can be washed away by
Whitest snow or last year's rain."[7]

Fig. 14A

Fig. 14C

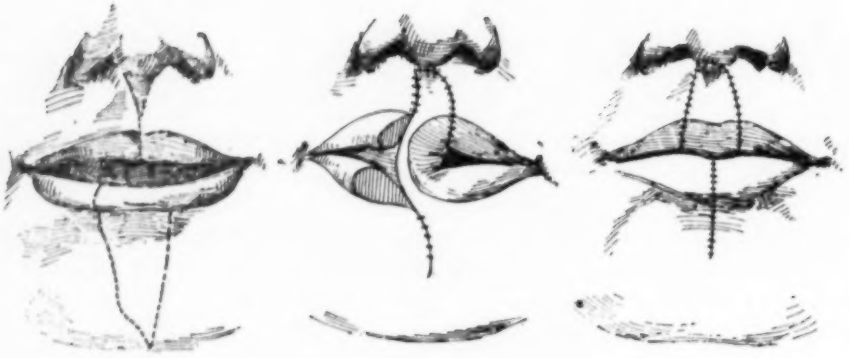

Fig. 14B

* Fig. 14A—Preoperative profile view of patient on whom Abbe transposed the lower lip flap to add tissue to the tight upper lip which resulted from repair of harelip.

* Fig. 14B—Abbe's drawing of the procedure known of now as the Abbe-Estlander flap.

* Fig. 14C—Postoperative view of same patient.

Robert Abbe loved his family and was greatly beloved by them. He contributed generously, though inconspicuously, to the college education of nieces and nephews, who otherwise might not have been able to attend college, as he was anxious to see the generation which followed his equipped to make contributions for the welfare of humanity. Towards this end he gave young relatives Bonds with the understanding that they would use the interest as gifts to charities which they them-

* From Stark, R. B.,[10] in *Plastic and Reconstructive Surgery 12*:41-58, 1953. Reprinted by permission of the publisher, Williams & Wilkins Company.

selves deemed worthy. In this manner he hoped to educate them to contribute intelligently towards charitable organizations.[8]

When Abbe was beginning practice at 32 East 20th Street, his carriage was drawn by a horse named "Ben." This favorite horse served Robert Abbe well, and when it came time to retire Ben, who was "Old Ben" by then, Abbe sent this faithful horse to his family home at Windham, where he was retired upon the farm.[8]

Abbe was a man of simple tastes, and he admired this trait in others. Abbe's love of simplicity is well illustrated by a conversation he had with Maude Adams following her operation for appendicitis. Abbe asked his patient to tell him about her jewels, expecting a person of her theatrical prominence to possess a large collection. She replied, "Dr. Abbe, I haven't any jewels." Abbe's admiration of her simplicity, both of answer and way of life, was so profound that he was Miss Adams' most enthusiastic supporter in her then current play, "Peter Pan."[8]

Abbe's sense of history, sharpened as it was by a visit to the College of Physicians in London where he handled the "gold headed cane" of Radcliffe, the scissors of Jenner, and the pointer of Harvey, prompted him to contribute the "Abbe cabinet," a collection of memorabilia of Lister, Pasteur, Jenner, and Rush, to the College of Physicians in Philadelphia. To this was added a radium instrument of Madam Curie's in 1921. Robert Abbe made these remarks at the presentation: "These are some names in our profession which represent our medical ancestors, as it were, whose very spirit provokes a thrill no ordinary thing inspires. The actual objects that felt the living touch of the great Pasteur, Jenner, Lister, Rush, Curie and others of like fame, are more sacred to us than is the cloak of Charlemagne or the cocked hat of Napoleon." Abbe made these imaginative remarks also, "If I were asked again, 'Will [the Curie instrument] feel homesick here?', I would say: Let us imagine some future evening here in this beautiful hall after the scientific audience has gone, the lights are turned out, the janitor has made his rounds, locked the door and gone home, the moonlight is streaming in the tall windows near the case and the Liberty Bell in Independence Hall has been struck midnight by some fairy hand. Then the little fairy spirits that stand guard over these mementoes awake. From the Curie instrument one stretches out his hand and touches another guarding the Pasteur crystal, grasps it and a chatter of French breaks the silence. This wakes up the sprightly guardian of Lister's instruments and Jen-

Fig. 15A Fig. 15B Fig. 15C

Fig. 15A—Letterhead of Abbe's stationary from his home at Brook End, Bar Harbor, Maine. In the background is the Japanese gardenhouse. In the foreground are the two swans, which he humorously named "Pierre" and "Marie" after the Curies in Paris.

* Fig. 15B—St. Luke's Hospital at Fifth Avenue and 54th Street. It was here that Robert Abbe joined the staff and later moved to the new hospital upon Morningside Heights.

* Fig. 15C—The Dalhousie Apartments at 40 West 59th Street where Robert Abbe moved in 1920 after the death of Mrs. Abbe. He continued to live there for the remainder of his life until 1928.

ner's ink stand, who join in an international parley at which the American spirit of Dr. Rush climbs out of his invisible retreat and they all dance about and narrate their wonderful past. Then one can see as dawn breaks they all hide again, invisible. The janitor unlocks the library, visitors come to study and pay homage to the great names we all worship. This historic instrument will not be lonely."[10]

Robert Abbe was one of seven children, who comprised a part of the seventh generation of Abbes in America. He was a descendant of John Abbe who settled in Salem, Massachusetts, in 1635. It is known that that John Abbe was born in 1613, in England, but his place of birth remains obscure. Robert Abbe felt that his family was probably of French extraction originally and that they escaped to England from the Huguenot persecution. That the family lived about or near an abbey is implicit in the name, but Abbe has always been an uncommon name in England and America.

It is thought that John Abbe emigrated from England for religious reasons, but this assumption is based upon the religiosity of John and his sons. Joshua, a member of the fourth generation of Abbes in America, was a founder of a Baptist sect known as the "Abbeites."

The early generations of Abbes remained in New England, in Salem and Wenham, Massachusetts, and Windham and Enfield, Connecticut.

* From Stark, R. B.,[18] in *Plastic and Reconstructive Surgery 12*:41-58, 1953. Reprinted by permission of the publishers, Williams & Wilkins Company.

The third and fourth generations of Abbes moved into the Connecticut valley, through central New York State, Ohio, Michigan, and eventually across the continent. The name of Abbe became synonymous with projects of community betterment.[11]

Robert Abbe's own father, George Waldo Abbe, was a New York merchant. He was a staunch member of the Baptist church and spent much time upon charities which benefited the sick and the poor. Giving freely of his time and monies to philanthropy, he was governor of The New York Hospital, a manager of the Hospital for Relief of Ruptured and Crippled, and a founder of the American Bible Union. A strong opponent of secession and slavery, George Waldo Abbe subscribed liberally to the equipment of the Union soldiers. In 1937 George Waldo Abbe married Charlotte Colgate, daughter of Bowles Colgate who was a founder of the Colgate Soap Company. Seven children were born to them, the elder five being boys. These children were Cleveland, Walter, William, Charles, Robert, Helen, and Harriet. Of these, Cleveland and Robert became the best known.[12]

Cleveland, the oldest son, was an astronomer and meteorologist of international renown. Being keenly interested in his ancestry, Cleveland compiled an exhaustive genealogy of the Abbe family.

Born at 7 Dutch Street (across from the Colgate factory) and raised in New York City, Robert Abbe, the fifth child and youngest son, was educated in the public schools until he was ready for college. The Abbe home at 32 East 20th Street, on the same street as the Roosevelt home, was large and comfortable. "Father's home seemed to attract every sort of worthwhile person, especially clergymen and editors. It seems to me as though the mohair sofa was always occupied on Sunday. They always seemed to relish our big roast beef dinners." Robert Abbe spent vacation periods at the home of his uncle in Windham, where earlier generations of Abbes had lived. "Fishing for brown bass or small fish in brooks was always part of the summer sport."

Robert Abbe wrote of his grandmother Colgate's home nearby the Abbe's: "Like all large families we small children were sent away to stay at grandmother Colgate's, 137 East 16th Street, when some had contagious diseases or when a new baby came. Well I remember the delight of these new experiences. We slept in grandmother's room where a big four poster bed had a trundle bed under it which disappeared in the daytime and was trundled out at night."

Cooper Union for the Advancement of Science and Art was nearby at Fourth Avenue and 7th Street. "Cooper Union was a favorite resort at times for the boys who had a great love for the night classes and the annual exhibition of students' work. One night I well remember going to the exhibition with cousin Clint Baker. The hot rooms were crowded and dear old revered Peter Cooper with his old style of dress of long coat and with his rubber cushion over his arm was finishing his talk. We gathered around him with the crowd, and I shall never forget the emotion of reverence as I told Clint I was going up to touch the tail of his coat, and I did. Even today I can recall the thrill that went through me and regard it as a sacred moment in my life. Whoever has not felt the thrill of reverence has missed a living experience of electric force, radioactivity in reality. What small events affect a child's life."[7]

Robert Abbe received his undergraduate training at the "Academy" (later College of the City of New York), graduating in 1870. During the last summer vacation before his graduation, Robert Abbe accompanied Cleveland upon an expedition to Sioux Falls, Dakotah Territory, to witness a total eclipse of the sun upon August 7, 1869. South Dakota had not then been admitted to statehood but was a part of Dakotah Territory. So far away and in such wild terrain was the object of this expedition that Cleveland was forced to modify his life insurance, as it was limited to certain latitudes and longitudes of the "civilized" United States.[12]

Following graduation from college, Robert Abbe remained upon the staff of the College of the City of New York as an instructor in drawing, geometry and English. Whether Abbe's innovations in the field of plastic surgery were the result of this unusual training cannot be ascertained. Abbe enrolled next at the College of Physicians and Surgeons, receiving the M.D. degree in 1874. He wrote his graduation thesis upon *Sarcina Ventriculi*.[13]

Abbe trained at St. Luke's Hospital from 1874 to 1876. The next year he became attending surgeon to the out-patient department of The New York Hospital and later attending surgeon at St. Luke's Hospital. For a time he served as a surgical preceptor to Dr. James L. Little of New York.

His father died soon after Robert Abbe opened offices upon Fourth Avenue for the practice of surgery. He wrote of this period, "After Father died, we lived in the same simple way, Mother, Hattie [Harriet,

Robert Abbe's young sister, kept house for him and managed his office until Robert Abbe's marriage], Helen, and I, but it became evident that, to cut expenses, I had best give up my outside offices on 282 Fourth Avenue and combine my home and office. Next year we had our parlor divided by a heavy hanging curtain across the middle. The back office room was mine and the back half parlor my reception room. It worked well for the next five years. Then I was earning a good income and had been two years attending surgeon at St. Luke's Hospital. Meanwhile I had decided, in 1880, having saved $1000, that it would be well for me to see the British, French and German clinics. Dr. McLane gave me good letters of introduction to Sir William McCormack and others. . . .

"From a medical point of view my visit to English hospitals was greatly to my gain and it gave me a sense of dignity and importance in knowing how the world was run which lasted me the rest of my life. Sir William McCormack was extraordinarily kind to me, a young surgeon. Perhaps America was the key that opened the door. He invited me to his clinic and rounds on his wards at the hospital and paid much respect to me as one of the group of students, physicians and surgeons going the rounds with him. He showed me especially a case of gunshot wounds which he said was perhaps not so rare with me as it was with him, for every American carried a pistol, so he supposed.

"He invited me to go with him to the Crystal Palace to the annual dinner of the Guys and St. Thomas Physicians and Surgeons. . . . It was a national holiday and we went by train. . . . We met 40 of the great men of the day whose names were on all the textbooks we used at home. I sat next to him at dinner. Champagne, a bottle for every man and a magnum here and there! There was a magnum in front of me. McCormack's arm was around my chair. Speeches followed, and I had to get to my feet, frightened to death, and said something. I got lots of applause as I was the only American present."[7]

Robert and Harriet returned to Europe together a second time ten years later with Doctor and Mrs. Robert F. Weir of New York, in 1890, to attend the International Medical Conference in Berlin.

When Robert Abbe returned from Europe to his practice in New York in 1880, he became professor of didactic surgery at Women's Medical College, on West 40th Street, New York City, from 1878 until 1880. Beginning in 1889, he lectured upon surgery at Physicians and Surgeons. He was professor of surgery at The New York Post-Graduate

Medical College from 1889 until 1897. In addition, he was an attending surgeon at New York Babies, New York Cancer, and Roosevelt Hospitals. At the time of his death in 1928, he was serving as consulting surgeon at Babies, Ruptured and Crippled, Women's, and Roosevelt Hospitals. He was a member of the Medical Society of the State of New York, the American Surgical Association and the American Radium Society. He was a member of the Century Association and the University Club.

Robert Abbe's inventiveness is well attested to by the plethora of original operations he devised, many of which were plastic in nature. These were innovations for equalization of disproportionate lips following surgery for harelip, for construction of an absent vagina, for relief of ankylosis of the temporomandibular joint, and for correction of Dupuytren's contracture.

Whether or not Abbe was aware that immediate cross-lip flaps, turned upon a vermilion pedicle, had been used prior to his description remains obscure for he accredits no previous source. Other surgeons had used such a pedicle previously, all for the correction of defects of the lower lip which resulted from excision of carcinoma. However, Abbe was the first to turn a pedicle from the relatively full lower lip into a tight upper lip that resulted from surgical correction of harelip. By this operation, Abbe was able to equalize the disparity which existed between the tight upper lip and the excessive lower lip. Concerning this procedure Abbe wrote in 1898: "A lad of 21 years recently presented himself for a conspicuous deformity of the lips, the sequel of an operation for double harelip in infancy, consisting in an extreme flatness and scantiness of the upper lip, with an enormous pouting and redundance of the lower one. He also had a complete cleft of the hard and soft palates, upon which two attempts had been made in former years to close. He desired this to be closed first, which I did, and operation was afterward done upon the lips.

"The inequality was admirably corrected by transplanting the middle portion of the lower lip into the upper. . . .

"A median vertical incision was made in the upper lip, and the central scar portion excised so as to obtain edges of an excellent quality of skin. The gap thus created was about three-fourths of an inch in width.

"A flap taken from the central portion of the lower lip, a little

wider than the upper gap, was then made, in such a way as to make a hinge upon one side containing the lower branch of the coronary artery on the left, which flap was turned upward so that its lower edge on the skin was placed beneath the *columna nasi*. The vermilion border was exactly stitched on one side . . . and numerous very fine stitches were applied so as to secure apposition around three-fourths of the flap. The lower part of the wound upon the chin was also brought in apposition up to the red portion.

"On the 12th day, the flap having grown perfectly in its new position, its base was very carefully cut from the lower lip so as to leave an ample portion of the red middle lip, which was turned upward and exactly fitted to the freshened edge of the free half of the lip. . . . The lower lip was then refreshed and sutured.

"The nutrition of this transplanted flap by its new capillary nourishment was so perfect that in color and texture, it seemed to have been always a part of the upper lip. The lines of suture rapidly faded and were quite insignificant. The two lips were afterward in about their normal proportion and gave the patient perfect satisfaction."[14]

Robert Abbe attempted to form a vagina which was congenitally absent by using a unilateral flap of labia minora. However, the vault achieved was shallow, and the married couple separated. In 1898, Abbe approached a second case differently by formulating a principle for grafting a cavity popularized during the first World War by Esser.[15] Abbe wrote:

"A crescentic cut was made across the interlabial space. . . . By blunt dissection a free cellular space was readily created between the bladder and the rectum, to depth of five inches. . . . Thiersch skin grafts were then cut from the thigh sufficient to cover an ample plug made thus: a thin French rubber pouch, such as can be obtained at drug stores, was sterilized by boiling and stuffed with long strips of iodoform gauze to its full capacity. Upon this the skin grafts were spread with their wet sides outward and edges freely overlapping. . . . [The method of transferring the grafts after floating them on rubber tissue immersed in salt solution was devised by me and has been continually used for the past eight years.] . . . The graft-covered form was carefully passed into the new vaginal space, the walls of which were held apart by three deep retractors, which on removal, allowed the fresh surfaces to come into closest contact with the wet surfaces of

the grafts. . . . On the tenth day the retention suture was removed, the end of the plug cut, and the packing first removed before the rubber form. After cleansing, it was seen that the grafts had taken universally and a new lined cavity had been created, four and one-half inches deep. The patient continued to wear a conformer. . . .

"Inevitable stenosis by cicatricial contraction has reduced the original canal to smaller proportions, but, as it was made more ample in the original design, it remains today a practical and competent canal, fulfilling at least one of its functions, and giving gratification to the mated couple."[16]

Robert Abbe was one of the first surgeons to perform a resection of the neck of the condyle of a mandible for ankylosis of the temporomandibular joint.

Abbe's patient was a ten-year-old boy who had had scarlet fever at the age of three with complicating chronic otitis media and mastoiditis. As a result of extension of this process, the lad developed ankylosis of the temporomandibular joint. Because of destruction of the center of growth in the condyle, the boy's chin exhibited recession.

The operation was performed with Robert F. Weir and W. T. Bull as assistants. Also present were H. B. Sands, C. D. Smith, Everett Herrick, A. B. Judson and T. B. Gunning. The latter was the ingenious dental surgeon whose device for intra-oral fixation in edentulous patients had been used by Gurdon Buck during the Civil War.[17]

Robert Abbe wrote of the operation:

"The patient being etherized, a vertical incision was made in front of the ear. . . . A second incision was then made one inch in length, along the lower border of the zygoma, meeting the upper end of the first at a right angle. . . . The included flap of skin was lifted up from the parotid, and the handle of the scalpel was pressed under the upper edge of the gland, working it away from the zygoma downward and backward toward the ear. An important branch of the facial nerve emerges from the upper and anterior angle of the parotid, not so near the ear as shown in the diagram. It partly supplies the orbicularis palpebrarum. This was observed and left intact while depressing the gland, and it was of interest to note that by the yielding of the neighboring soft parts, by the careful use of a small periosteum elevator in the place of the knife (which latter was not used after the skin incisions), the nerve fibers encountered were gradually worked downward at the

bottom of a space from one to one and a half inches below the zygoma. Thus, they were somewhat stretched, without being cut or torn.

"The periosteum elevator now served to strip off the posterior fibers of the masseter muscle from the zygoma, and to clear the neck of the condyle below the tubercle of its articular end.

"This being done, a narrow ostectomy chisel was brought to bear just below the expanding condyle, and carefully driven half through the bone. A Delabarre's jaw dilator was next introduced between the incisor teeth and by the use of considerable force the bone was suddenly snapped at the point where the chisel had made it weak. Instantly the jaws parted freely, showing good mobility of the opposite joint.

"It now remained to remove as much of the condyle as was practicable, and an hour was spent in carefully using the chisel, gouge and Langenbeck's gouge, and rongeurs. Thus, the neck of the condyle was removed . . . from the lowest point of the sigmoid notch up to its junction with the articular end.

"The jaw was opened with increasing freedom after the first week. . . . The dilator was not used more than four or five times during the following month, and at no time did I think anything was gained by it. . . .

"At present, three and a half months after the operation, there is absolutely no evidence of tendency to contraction. The mobility of the jaw and the power of mastication are perfect."[18]

Because of his interest in surgery of the hand, Robert Abbe chose to speak on this subject when invited to deliver the Dr. Wesley M. Carpenter lecture before The New York Academy of Medicine in 1893.[4] He reported on four sarcomas of the hand; upon "trigger," "drop," and "baseball finger"; and upon macrodactyly. But the major portion of his address dealt with Dupuytren's contracture, a subject upon which Abbe had written in 1888.[19] He promulgated the theory that this contracture was of nervous origin and championed the advantages of excision of the palmar fascia over fasciotomy.

"[Dupuytren's contracture] is essentially a hyperplasia of the palmar aponeurosis fibers, with involvement of the areolar connective tissue of the palm, after taking in the skin also. But what cause can be assigned for its commencement is yet a moot point. It comes with mysterious quickness, and never is spontaneously arrested. . . .

"The tendency has been to resort to the subcutaneous division of

the bands at several points in the palm. This method was uniformly resorted to by me in the early years of my experience. Finding many recontractions and believing that the absolute safety of good surgical work enabled one to cut out and get permanently rid of the offending band of diseased fascia, I have during the last few years resorted in most cases to excision. The results have been better than subcutaneous division in my hands. The operative procedure is thorough, safe and exact. It can be done painlessly and bloodlessly with cocaine anesthesia combined with Esmarck's bandage, and leaves soft linear scars."[19]

In writing of the possible role of tobacco in the causation of intra-oral carcinoma, Abbe said:[20] "With the cause of cancer still unknown, every contribution to its study helps to solve the problem. One cause is universally accepted; that is, continual irritation of any part of the sensitive body tissue, thus localizing the outbreak of the disease, if, indeed, it be not the actual cause."

At the age of forty, Robert Abbe married Catherine Amory Palmer, widow of Courtland Palmer, who had been a close personal friend of Robert Abbe. After their marriage, the Robert Abbes lived at 11 West 50th Street, where Robert Abbe had moved several years before, but, when two of Mrs. Abbe's children by her previous marriage, Eva and Courtland Palmer, Jr., moved in with them, Robert Abbe purchased 13 West 50th Street, as well, combining the two buildings into one home. Abbe maintained offices there, making the second floor into a music studio for Courtland, Jr.

Mrs. Abbe was a lady of considerable wealth. An intense interest in the history of New York led her to found the New York City History Club in 1897. In a series of articles written for the New York Herald, Mrs. Abbe recounted the Battles of Golden Hill, Long Island, Harlem Heights, and Fort Washington. When Mrs. Abbe died in 1920, Robert Abbe moved to 40 West 59th Street, where he lived until his own demise in 1928.[21]

After his marriage, Abbe went often to Bar Harbor, Maine, where he became interested in Red Paint Indians, members of the Appalachian Tribe. He was interested also in Stone Age relics found on Mount Desert. Assembling these, he founded the museum in Lafayette National Park which was named for him and which was to house his collection. One summer this ever-active man busied himself constructing a papier maché scale model of Mount Desert.

Robert Abbe and his nephew, Dr. Truman Abbe, attended the International Radium meeting in London in 1913, at which Robert Abbe spoke. Previously, Robert Abbe had become conscious of a growing tightness in his hats. Fearing that he was suffering from Paget's disease and not wishing this word to reach New York, Robert Abbe had his skull x-rayed while he was in London, and these films confirmed his suspicions.[12]

Later it became apparent that Abbe was suffering from an aplastic anemia, presumably due to his long association with radioactive elements. During his later days Abbe required transfusions approximately every six weeks, many of which were followed by reactions due to the imperfect understanding and technique of the typing and cross matching of blood. But even in pain in the lateness of a life that was rapidly running out, Robert Abbe wrote characteristically to his nephew: "You will be glad to know that yesterday and today my strength and general well-being are at the peak. Since my sixth transfusion (the second at Brook End) which was over two weeks ago—I have been better than for a year and a half. My skin is bronze and my face red—my veins are full, appetite unabated, spirits high, sleep profound, and mind clear. What more could be wished? The six weeks at Brook End have seen weather with unmatched charm for cool refreshing pine air and breezes mostly from the northwest—full of pep! My chart of blood tests I have ceased to look at for the past month—for the reason that it got on my nerves. Though my tests are made every day with religious punctuality, by my faithful and trusted guardian, my sense guided me to say to Miss Moon 'I am resolved to leave to you and Miss Thompson the privacy of my chart. If it goes up or down, you will be as wise as I would.' The result was delightful! Three weeks later when I thought I was doing well and had risen at 3:45 a.m. to view a beautiful sunrise from the sun parlor, I went back elated, and only when a light breakfast was brought up to me, Miss Moon said, 'You are to eat lightly this morning because Dr. Unger is downstairs on the porch waiting to give you another transfusion, and we have a splendid donor, a medical student from New York, who has been four years up here in summer earning money to pay his way at the College of Physicians and Surgeons.' So in came a fine, stocky, healthy, Italian (Caruso-type), black hair, red cheeks and an arm like a blacksmith. In a few minutes I had bitten into him about a quart. He seemed to feel better and so did I.

THE INDEX

TO THIS VOLUME HAS BEEN REMOVED FROM THIS POSITION AND PLACED AT THE BEGINNING OF THE FILM FOR THE CONVENIENCE OF READERS.

Next day I began to sing opera from my porch and might have been heard across the bay. My hope is now to keep my record up and greet you in New York with new vigor. Every day I search the stolid faces of my two guardians but they are both masks of the finest quality. Thus, without knowing much, my trust is required."[22] And later, Robert Abbe wrote: "At present the beauty of spring; the sky at dawn; the fresh verdure; the crisp breezes that blow from the sky; floating, scudding clouds–all have a new charm, now I realize how near I came to missing them all; and above all the pleasure of my friends show that I am still on the planet."[23]

This "lover of nature–[this] man of artistic sensitiveness, scientist, surgeon, gentleman of distinguished attainments, rarely lovable friend"[24] died at home March 7, 1928. Services for him were held in the Chapel of St. Luke's Hospital, New York.

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MONTHLY PANEL MEETING ON THERAPEUTICS FOR THE GENERAL PHYSICIAN

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Subject: **VALUE AND SCOPE OF ROUTINE ANNUAL PHYSICAL EXAMINATION**

Moderator:

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PAUL B. SHELDON — *Assistant Clinical Professor of Medicine, College of Physicians and Surgeons, Columbia University; Associate Attending Physician, Presbyterian Hospital*

FUTURE MEETINGS

Friday, January 6, 1956

Subject: MANAGEMENT OF SEVERE UPPER GASTROINTESTINAL HEMORRHAGE

Moderator: FREDERICK H. AMENDOLA — *Associate Clinical Professor of Surgery, College of Physicians and Surgeons, Columbia University; Chief of Surgery, Roosevelt Hospital*

Members: BURRILL B. CROHN, PAUL REZNIKOFF; LOUIS M. ROUSSELOT

Friday, February 3, 1956

Subject: THERAPY OF DISEASES OF THE GALL BLADDER AND BILE DUCTS

Moderator: J. RUSSELL TWISS — *Professor of Clinical Medicine, New York University Post-Graduate Medical School; Attending Physician, University Hospital*

Members: ALBERT F. R. ANDRESEN, FRANKLIN M. HANGER, HOWARD A. PATTERSON, WILLIAM H. SHEHADI

Friday, March 2, 1956

Subject: MANAGEMENT OF THE PAINFUL SHOULDER

Moderator: HARRISON L. MCLAUGHLIN

Friday, April 6, 1956

Subject: SIGNIFICANCE AND MANAGEMENT OF "HEARTBURN"

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December 22 SARCOIDOSIS—Carl T. Nelson, *Professor of Dermatology, College of Physicians and Surgeons, Columbia-Presbyterian Medical Center, New York.*

ACUTE NON-PURULENT MENINGITIS—Yale Kneeland, Jr., *Associate Professor of Medicine, Columbia University, New York.*

December 29 THE ROLE OF A NEW GROUP OF PREVALENT VIRUSES IN UNDIFFERENTIATED RESPIRATORY ILLNESSES — Robert J. Huebner, *Chief, Virus and Rickettsial Diseases, National Microbiological Institute, Bethesda, Maryland.*

SELECTED SKIN DISEASES OF CHILDHOOD—Morris Leider, *Associate Professor of Dermatology and Syphilology, New York University Postgraduate Medical School, New York.*

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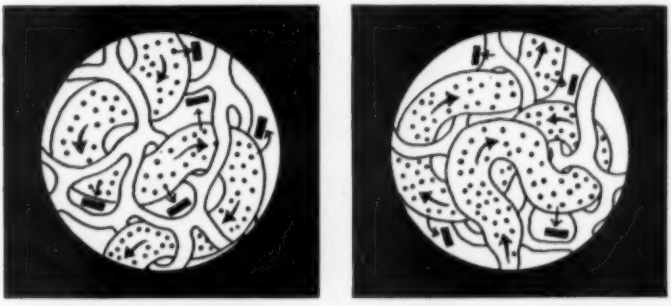
Searle MICTINE Provides Effective Oral, Non-Mercurial Diuresis

The result of many years of research, Mictine, brand of aminometramide, supplies a long-felt need for an improved oral diuretic. Mictine, 1-allyl-3-ethyl-6-aminotetrahydropyrimidinedione, is not a mercurial, xanthine or sulfonamide.

Effectiveness: Every method for measuring the diuretic effect in man now available, including precise human bioassay studies, without exception demonstrated that Mictine is an effective oral diuretic, and these studies show that approximately 70 per cent of *unselected* edematous patients treated with Mictine by mouth respond with a satisfactory diuresis.



Mictine is believed to act by the selective inhibition of the reabsorption of sodium ions. Thus, the resulting diuresis is characterized by increased quantities of sodium ions and water.

Well-Tolerated: There are no known contraindications to Mictine, even in the presence of hepatic or renal damage, and there is no risk of acidosis. On high dosage, Mictine causes some side effects in some patients but on three tablets daily these side effects (anorexia and nausea, rarely vomiting, diarrhea or headache) are minimal or absent.

Indications: Mictine is useful primarily in the *maintenance* of an edema-free state and in the *initial and continuing* control of patients in mild congestive failure. Mictine may be used also for *initial and continuing* diuresis in *more severe* congestive states, particularly when mercurial diuretics are contraindicated.

Administration: The usual dosage for the average patient is one to four tablets daily with meals, in divided doses on an interrupted schedule. An interrupted dosage schedule may be accomplished by giving the drug on alternate days or for three consecutive days and then omitting it for four days.

For severe congestive states the dosage is four to six tablets daily with meals, in divided doses on interrupted schedules similar to those already mentioned.

Supplied: Uncoated tablets of 200 mg.

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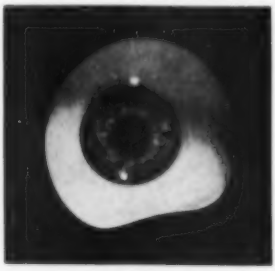

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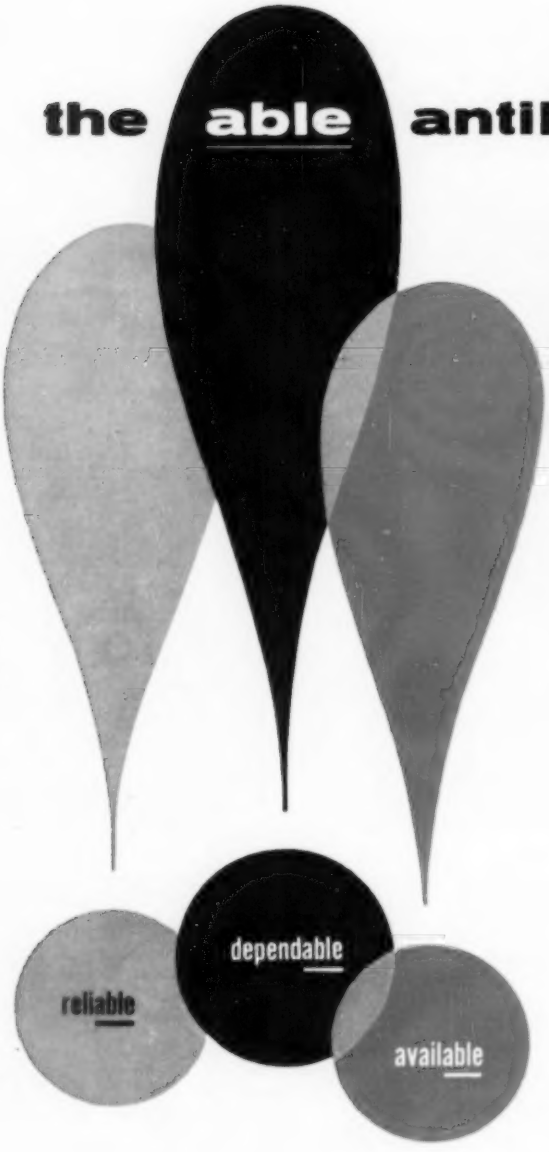

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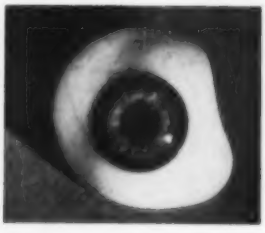

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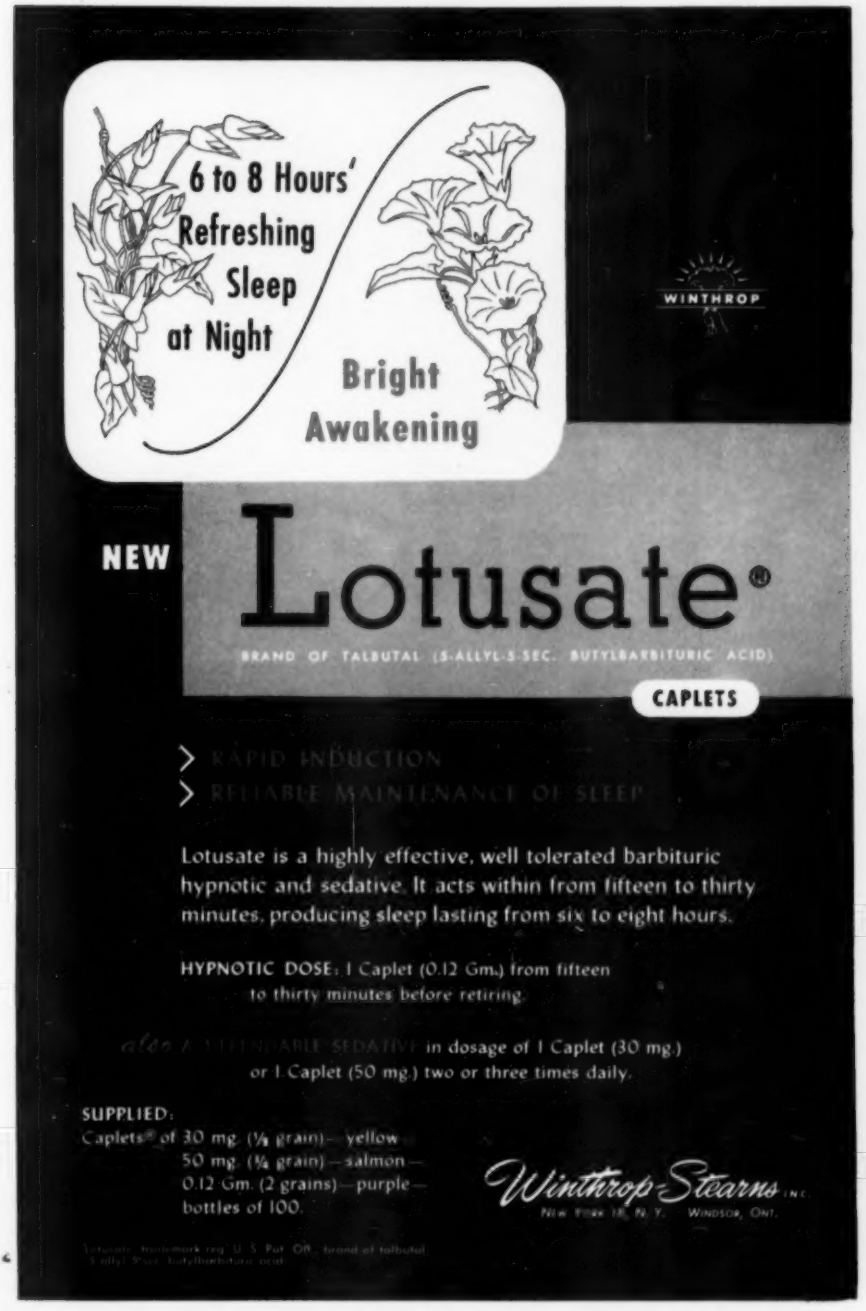
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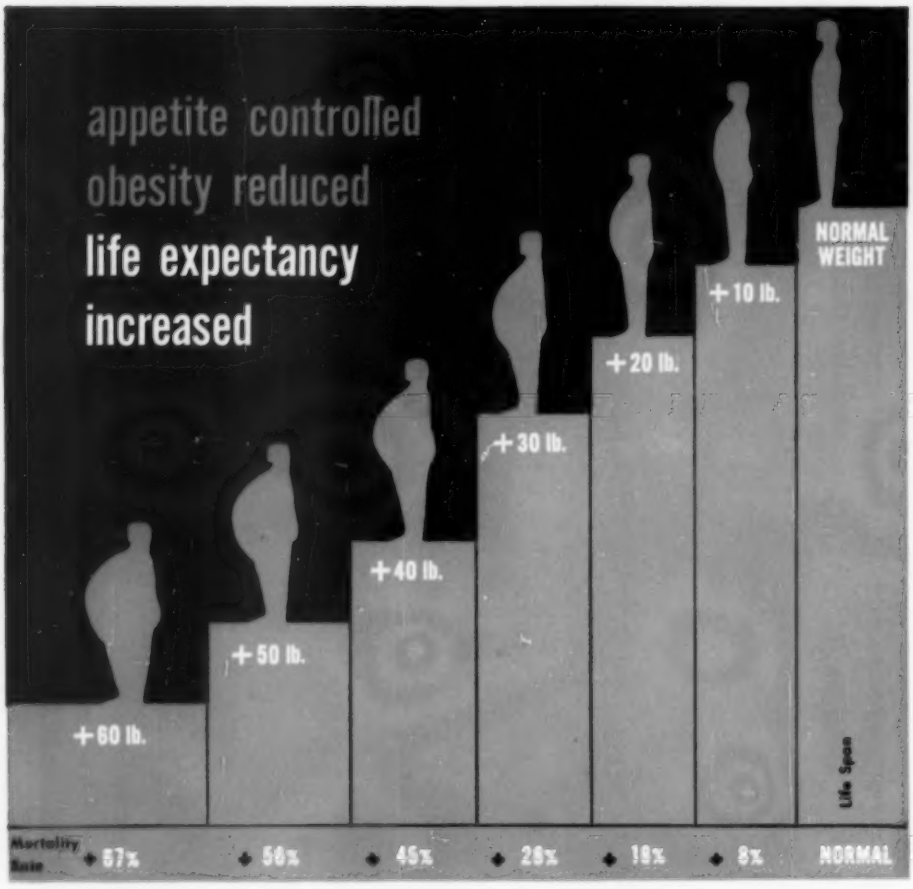

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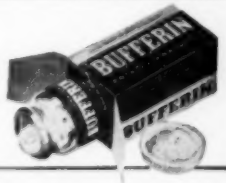

References: 1. Fremont-Smith, P.: J.A.M.A. 158:386, 1955. 2. J.A.M.A. 141:124, 1949. 3. M. Times 81:41, 1953.

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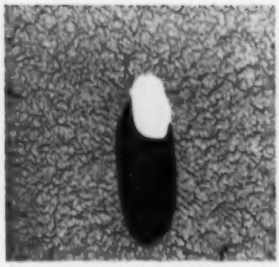
The organisms commonly involved in

Pyelitis

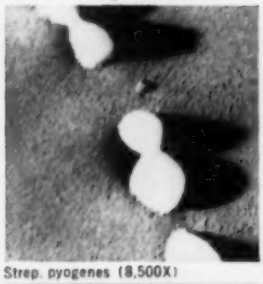
E. coli (8,000X)

Aerobacter aerogenes (12,500X)



Salmonella paratyphi A (8,000X)

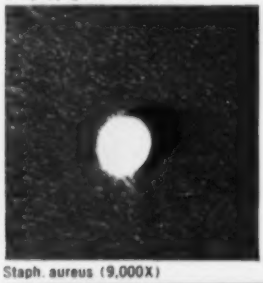
Salmonella paratyphi B (6,500X)



Strep. pyogenes (8,500X)

Strep. faecalis (10,000X)

Strep. viridans (9,000X)



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